The OIL WEEKLY

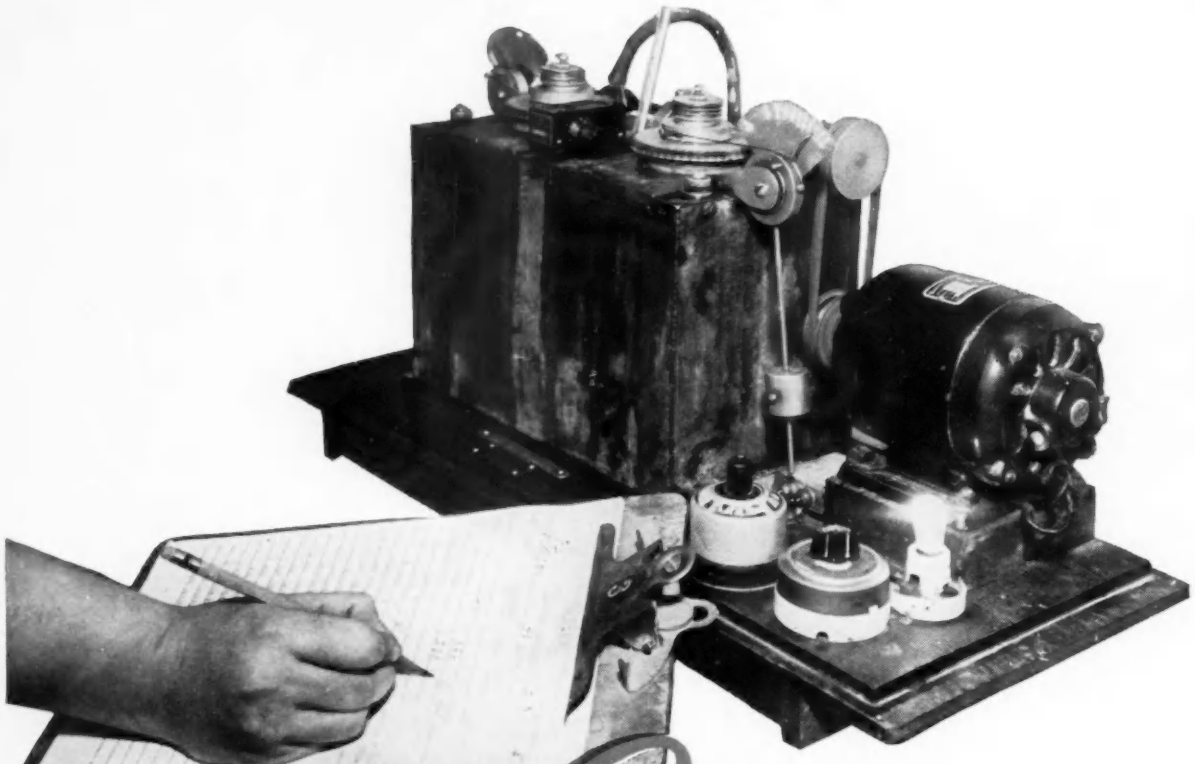
FOR THE DRILLING, PRODUCING AND PIPE LINE INDUSTRY

Hughes Engineering...

GUIDE AND GUARDIAN OF TODAY'S STANDARDS

From raw material to the finished product, Hughes Tools are ENGINEERED to give you maximum performance. CREATIVE ENGINEERING, that anticipates ever-advancing requirements, PRACTICAL ENGINEERING, that safeguards design and manufacture . . . HUGHES ENGINEERING that keeps Hughes Tools "The Standard of the Industry."

Hughes Tool Company **HOUSTON, TEXAS**



PRE-TESTED *Pumpability*

PRE-TESTED cement performance helps insure the entire oil-well investment. Pre-tests with the Halliburton Consistometer, for example, reflect length of thickening time of cement subjected to high bottom-hole temperatures. Four PRE-TESTED cements cover every oil-field requirement: 'STARCOR'* for deep wells, high strength, extra sulphate resistance. 'TEXCOR'* for deepest wells, high strength and extra sulphate resistance. 'INCOR'* for moderate-depth wells, earlier drill-out. LONE STAR CEMENT for all-around oil-field dependability. Select the cement that fits your well — they're all pre-tested for assured performance.

*Reg. U. S. Pat. Off.

LONE STAR CEMENT CORPORATION • DALLAS • HOUSTON

Specialized Oil Publications of
THE GULF PUBLISHING COMPANY

The OIL WEEKLY and The COMPOSITE CATALOG for the drilling-producing-pipeline industry

PETROLEUM REFINER and The REFINERY CATALOG for the refining-natural gasoline industry

LOOKING AHEAD
. . . with the Editor

AS HAS been true in many areas where large deposits of oil have been discovered, active exploration in Mississippi has done much to upset earlier predictions as to possibilities of production, and has brought a much sounder geology that was formerly employed in wildcatting there.

The state is now recognized as an established oil producer and is generally considered to have great unexplored possibilities. Five years ago only one large structure was producing oil; now several fields are producing that will yield more and better oil than Tinsley, the discovery field, and there are 17 fields yielding commercial output.

When Tinsley was discovered, only the uppermost Cretaceous was petroliferous, and Tuscaloosa production was only a faint hope. Now the basal Tuscaloosa is considered the minimum objective for any wildcat. All previously known upper horizons are still potential and the Tuscaloosa has proved itself to be a great producing reservoir at many places over a large area. The Paluxy has indicated it will produce at Lake St. John, the production at Delhi is probably Paluxy, and the Brookhaven and other wells have indicated possibilities for the Glen Rose.

John D. Todd, petroleum geologist, of Houston, Texas, recently discharged from service as a major in the Army Air Force, and a former contributor to THE OIL WEEKLY, resumes his writing in an article discussing the possibilities of further production in Mississippi. The article will appear in an early issue.

THE OIL WEEKLY

ENGINEERING • NEWS • STATISTICS

Published by THE GULF PUBLISHING COMPANY, Houston, Texas

R. L. DUDLEY, *President, Publisher* A. L. BURNS, *General Manager*

TOM W. NELSON, *Advertising Manager*

ADVERTISING STAFF

DICK SWINSKY.....New York
C. L. HASKINS.....Cleveland
H. G. FITZPATRICK.....Chicago
J. F. CARTER, JR.....Tulsa
J. W. CURTS.....Los Angeles
CHAS. WYATT.....Houston

BRANCH OFFICES

NEW YORK.....250 Park Ave. (17)
CLEVELAND.....1010 Euclid Ave. (15)
PITTSBURGH.....429 Fourth Ave. (19)
CHICAGO.....332 S. Michigan Ave. (4)
LOS ANGELES.....W. W. Wilson Bldg.
Huntington Park, Calif.
TULSA.....Hunt Bldg. (3)
FORT WORTH..W. T. Waggoner Bldg. (2)
WASHINGTON.....Munsey Bldg. (5)

CIRCULATION DEPARTMENT

G. D. CROFTON.....Manager

ABC

Member Audit Bureau of Circulation and Associated Business Papers, Inc.

ABP

EDITORIAL STAFF

WARREN L. BAKER
Editor

SILAS B. RAGSDALE
Managing Editor

L. J. LOGAN
Associate Editor

DISTRICT EDITORS

BERTRAM F. LINZ.....Washington
H. H. KING.....Fort Worth
DON L. CARROLL.....New York
ANTHONY GIBSON.....Tulsa
R. W. BYRAM.....Austin
ELTON STERRETT, A. R. McTEE, GEORGE O. IVES, AL REESE, WELDON B. HILL.....Houston

Contents . July 9, 1945
Volume 118, No. 6

The Changing Panorama 23

Technical and Feature Articles:

Cabin Creek Field Water Injection 24
By C. F. TERRELL

Cutting and Fishing Stuck Casing 28
By GEORGE O. IVES

Wyoming, General Geologic Features 30
By PIERRE LAFLEICHE

Kuwait to Begin Production Soon 34
By DON L. CARROLL

Texas Natural Gas and Conservation 38
By JACK K. BAUMEL

Operating Hints 46

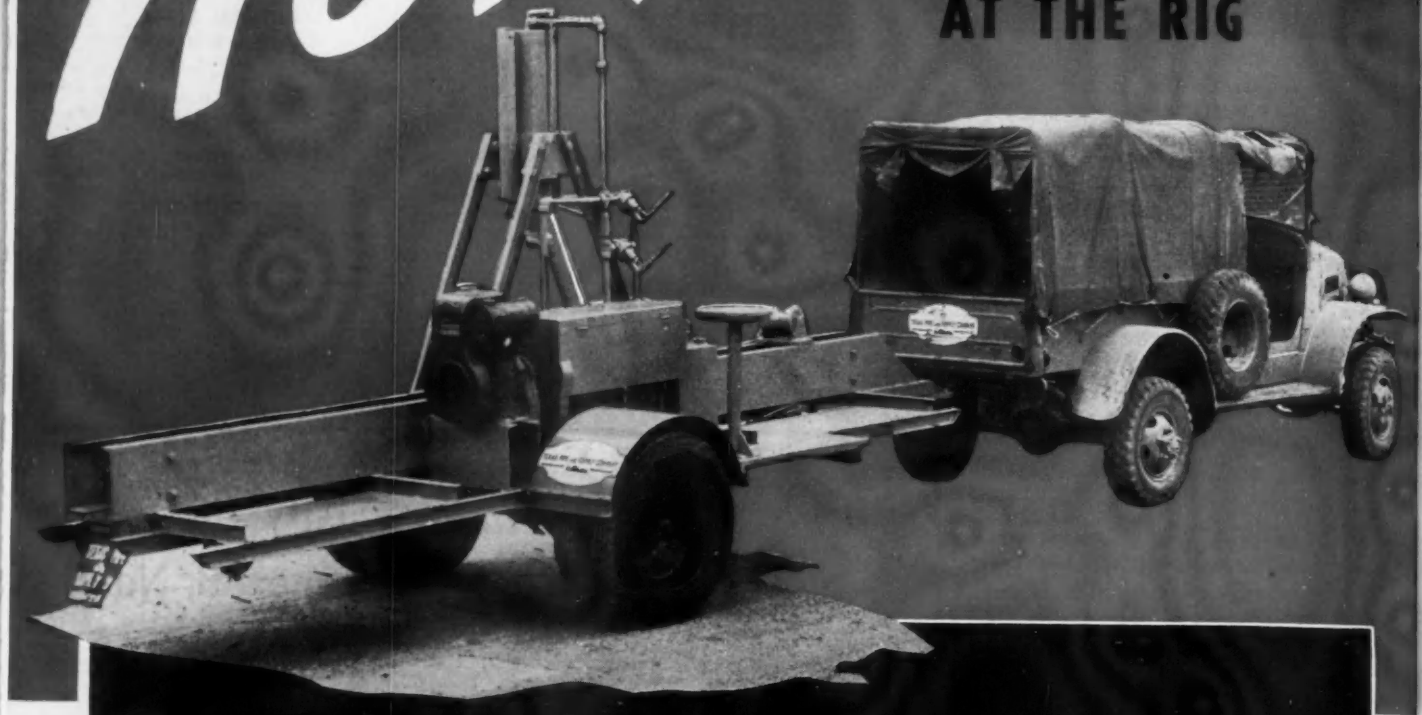
News and Departments:

Looking Ahead 21
The Outlook 49
The Week's News 51
Market Trends 57
Pipe Line News 59
International News 60
Field Operations 63
Exploratory Completions 78
Wildcat Starts 80
Squeaks from the Bull Wheel 81
Men in the Industry News 82
New Equipment, Literature 84
Index to Advertisers 88

Published Every Monday. Single Copies 15 cents (Except Special Issues). Subscription price: domestic and foreign, $2.00 a year; 2 years, $3.00; 3 years, $4.00. Advertising rates on application. Copyright 1945 by The Gulf Publishing Company.

Now!

WE CAN STRAIGHTEN YOUR PIPE AT THE RIG



Portable Pipe Straightener

No longer need you send your pipe . . . including kelly and drill pipe . . . to a shop to have it straightened. Our recently perfected and proven PORTABLE HYDRAULIC PIPE STRAIGHTENER can be brought direct to your rig, where our own crews will straighten any pipe, from 2" to 12".

Saves Time and Transportation Costs

Mounted on a trailer, our Portable Pipe Straightener is ready to be sent immediately to your location, saving the time and cost of having a truck come to the rig, haul your crooked pipe to a shop for straightening and return it to the rig. This compact, powerful unit can be taken to the most isolated locations.

Expert Crews

Each unit is sent on the job with men highly skilled at straightening pipe. Hydraulic pressure for the unit is provided by a gasoline engine, assuring adequate power to straighten any pipe. Don't drill with crooked pipe, when it's so economical to have it straightened at the rig with the Texas Pipe & Supply Company's portable hydraulic pipe straightener. Call our nearest store for immediate service.

TEXAS PIPE AND SUPPLY COMPANY
INCORPORATED
NEW IBERIA — CORPUS CHRISTI
1700 Block Maury St — Phones Cap. 0296, L. D. 448
HOUSTON, TEXAS

STRAIGHT DRILL PIPE *Reduces*
WHIPPING — EXCESSIVE FATIGUE — CASING WEAR — WALLOWING OF TOOL JOINTS

The Changing Panorama

Near East Prospects Are "Looking Up"

PROSPECTS for materially larger crude oil production from the Near East has become a reality instead of a prospect. Expansion of the area's producing rate to above 575,000 barrels daily by the end of 1945, and then to slightly more than 600,000 barrels by early 1946 is assured by projects under construction. This will compare with 525,000 barrels daily the end of 1944 and 400,000 barrels per day at the close of 1943.

Another definitely scheduled project will add 180,000 barrels per day to facilities by early 1948, raising the region's total capacity to nearly 800,000 barrels daily. Preliminary studies are under way on still another project that would boost facilities to more than a million barrels daily. And these plans do not include any expansion for Iran, largest producer in the region.

More Saudi Arabia production is a certainty before the end of this year, through completion of a 50,000-barrel refinery at Ras Tanura. Kuwait is to market its first production in early 1946, when a new 15-mile pipe line will begin carrying 30,000 barrels daily from the Burghan field to the Persian Gulf. This field is regarded as one of the world's largest. See page 34.

Iraq output could be tripled in early 1948, for a second pipe line is to be constructed from the Kirkuk field to Haifa on the Mediterranean Sea. Construction is to start within six months and be finished by early 1948 on a 16-inch carrier with a capacity of 180,000 barrels daily—double the capacity of the present Kirkuk-Haifa line.

A huge additional increase in Saudi Arabian output is probable within a few years. Arabian American Oil Company currently is making preliminary surveys for a pipe line from fields near the Persian Gulf to an eastern Mediterranean port that may have a capacity of 250,000 to 300,000 barrels per day.

Not Ponderable

THE other day we received a questionnaire from a national magazine asking if we thought that a six billion dollar credit be extended by the United States to Russia.

A few minutes before we received the questionnaire we had re-read what General Marshall had told Congress about Russia and Japan. The general had said that the question of whether the Russians will enter the war against Japan is one of the great imponderables. It seems to us that whether or not we should extend credits to Russia is not even ponderable when the question of the continued value of Russian friendship is a "great imponderable."

Makeup Changes

MECHANICAL requirements, brought on by manpower and material shortages, have forced THE OIL WEEKLY to make slight changes in the positions accorded some of its better known features.

Commencing with this issue, "The Outlook," popular new feature that keeps the reader a jump ahead of actual news breaks, will be found immediately following the technical-economics section rather than preceding it.

"The Week's News" also will be switched along with "The Outlook" from its usual front-of-the-book position to a spot nearer the center.

This week "The Outlook" appears on page 49 and "The Week's News" commences on page 51.

Readers, we feel sure, will accept the slight inconvenience that may result from these changes which were designed, on the whole, to enable THE OIL WEEKLY staff to give readers the latest items possible in its news departments.

Texas Makes Progress In Gas Conservation

IN ALL the recent discussion of the natural gas question, little has been said about the improvement achieved in late years in natural gas conservation, and especially in the reduction of actual waste through venting into the air. It is time that the industry's achievements along this line be recognized by the public and regulatory authorities of both state and federal governments. Perhaps, then, there would not be so much condemnation of the industry and its practices.

In this connection, Jack Baumel of the Texas Railroad Commission, points out (see page 38) that the venting of gas to the air in Texas has been reduced from 384 billion cubic feet annually or 37 percent of the gas produced in 1935, to 111 billion cubic feet or 4½ percent of the gas produced in 1944.

This constitutes real advancement in the elimination of gas waste, and in the very state everyone accuses of doing nothing about it.

We venture the cautious prophecy that when the world calms down and begins to plan sanely to abide in peace, many of the nebulous ideals which thinkers are groping towards will have boiled down to the American way of doing things.

—Allis-Chalmers
Manufacturing Company.

Motor Fuel Market And Auto Production

ONLY the return of unrestricted making and buying of automobiles can assure the oil industry a market for its motor fuel, come V-J day. Although automobile makers have been granted permission to make some new automobiles, the number is such that in 1946, unless restrictions are relaxed, there can be little change in private gasoline consumption.

Here are some vital auto statistics from *Tide Magazine:* Passenger car registrations are down to 25 million from the 29½ million peak. Cars are going to the junk heap at 4000 a day. One fourth of the cars now operating are 11 years old. Average age of the whole 25 million is 7 years. In prewar years the average age was 5.8 years.

Even if limited manufacture can hold the line against current junking, peacetime gasoline consumption volume can not be expected because the old car is not worthy of the sort of use demanded of new cars.

The tenacity with which owners cling to old cars is the best evidence they will buy new ones. Manufacturers are anxious to provide the new cars. But the plants must be held on the beam for the war in the Pacific. Thus far WPB has granted priorities for the building of 691,018 automobiles by the end of 1946.

These cars will be sold under rationing, perhaps identical to that now prevailing. How soon this can be changed is the uppermost question. Henry P. Nelson of WPB is this hopeful:

"With luck, rationing may be lifted late this year or early next."

There are impressions in Detroit that passenger car and truck manufacturing can reach a peak of 6 million a year. The prewar peak was 4½ million, of which about 700,000 were trucks. It will require several years of record manufacturing to catch up with a four-year backlog, it having been estimated by one large car manufacturer that 18½ million cars and trucks would be required to return United States motor vehicle to normal usage.

Technique Improved

EXPERIMENTAL work in water-flooding a 3000-foot sand in the Cabin Creek field, West Virginia, has resulted in improved injection-well completion methods and a completely stable and non-corrosive flooding water. These improvements have greatly simplified the water-flooding program and appear certain to give substantial increases in ultimate recovery from the field. Particulars of the project as given in a story on page 24 of this issue will be of interest to all operators concerned with secondary recovery.

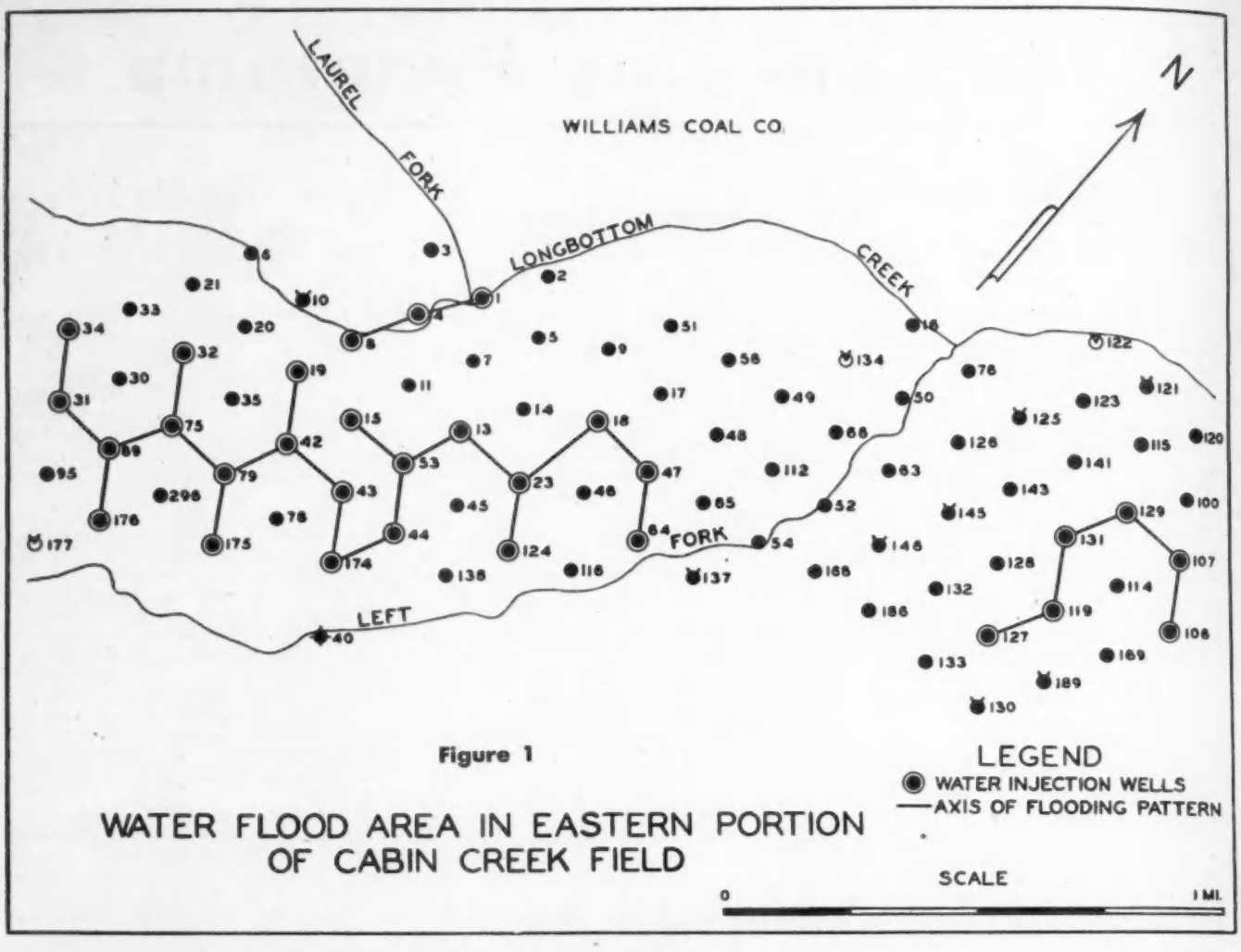


Figure 1

WATER FLOOD AREA IN EASTERN PORTION OF CABIN CREEK FIELD

Cabin Creek Field Water Injection

BY C. F. TERRELL

The Pure Oil Company, Newark, Ohio

This paper was prepared and approved for presentation before the 1944 annual meeting of the American Petroleum Institute. The annual meeting having been cancelled, the paper has been released for publication.

THE Cabin Creek field is located in south-central West Virginia about 20 miles southeast of Charleston in Kanawha and Boone counties. According to Wasson[1] "this pool is strictly a monoclinal accumulation found in the thickened lensed portion of the lower part of the Berea sand, well down the side of a syncline. The lens extends parallel to the synclinal axis in a long narrow strip over an oil-producing area 12 miles long by ½ to 1 mile wide. The Berea dips from the crest of the Warfield anticline at the rate of 85 feet per mile across the Cabin Creek pool."

The Berea sand ranges in thickness from 15 feet at the lower or downdip edge of the field to about 50 feet at the upper edge, with an average of about 35 feet. It is composed of a non-productive cap rock of hard white quartzite of practically uniform thickness of about 15 feet, and an immediately underlying oil-pay section of pure quartz sand. The pay sand contains occasional thin dark shale lenses, which are erratic in extent and location from well to well. The texture of the pay sand varies from very fine grained to pebbly. The small well-rounded pebbles are found in thin

[1] Theron Wasson and Isabel B. Wasson, "Cabin Creek Field, West Virginia," *Bull. Am. Assoc. Petroleum Geol.* 2 (part 2) 705-19 (1927).

streaks with erratic occurrence and extent throughout the sand body. The sand grains are angular with cementation, varying from very poor to good.

No formation cores have been taken on any of the wells in the older eastern end of the field, but some of the wells on the newer western end have been cored during the past 10 years. The last 13 wells cored showed an average sand porosity of 15½ percent, with a range through the average well of from 20 percent to 10 percent. The permeability averaged 70 millidarcys, and varied from 355 millidarcys to about 0 through the average core. Oil- and water-saturation tests were considered of little value due to the flushing effect of cable-tool coring methods. Two wells were cored using oil only for the drilling fluid, the results of which indicated rather clearly that the sand probably contains between 40 and 50 percent connate-water saturation. No Berea water has been produced during primary operations in this field.

The wells vary in depth from 2400 to 3300 feet, largely due to the field's mountainous location. Cabin Creek crude is a clear light-amber-colored Pennsylvania-grade oil, with an average gravity of 47°.

Primary History

The field was discovered in 1914. The entire producing area is operated by The Pure Oil Company, except for a small portion of the east end of the field, which is not considered in this report. All wells have been drilled with a relatively uniform 700-foot spacing, and on a staggered triangular pattern of about 9.7 acres per well.

In all, 381 productive oil wells have been drilled, of which number 251 are still producing—the balance having been abandoned, shut in, or converted to gas- or water-injection wells. The total proven productive area is about 4600 acres; only 6 dry holes have been drilled in the oil area of the field.

The initial production of wells varied from 10 to 450 barrels of oil per day. The original rock pressure is unknown, except that it was as high as 800 pounds per square inch. Present pressures in the oil-bearing portion of the field range from 35 to 65 pounds per square inch.

Secondary-Recovery Operations Prior to Water Flooding

A gas-injection program was started during 1932, which has been extended until it now covers practically all of the field—although, due to the shape of the productive area, many wells are not affected.

Additional recoveries due to gas injection on the older wells probably vary between 100 and 600 barrels per acre, depending on the local sand conditions and location of the producing wells with respect to injection wells. The ultimate increased production will probably be 50 percent higher than this. Wells completed in more recent years will produce a much larger volume.

History of Water Flooding

In 1937 fresh-water injection was started in 3 wells (No. 1, 4, and 8 in Figure 1) as an experiment. These wells border the upper edge of the oil field. After 39 months, injection was discontinued, after 420,000 barrels of water had been injected. The first line of downdip producers showed oil-production increases, but went completely to water in 6 months or less, except No. 5. Total increased oil production due to water flooding was about 750 barrels for No. 7 and 250 barrels for No. 11. The production from No. 5 started increasing slowly after 2½ years of water injection, and for the past 3 years has had a constant oil production of 3½ barrels per day with no water production. Accumulated increased production of No. 5 due to water flooding is now about 4200 barrels of oil. Daily production before the flood was about 1/3 barrel of oil per day. No. 19 also was affected, but soon went to water.

Fresh water from 200-foot-deep water wells in the field was used for the injection medium. The water was treated chemically; but, due to the unexplainable changing characteristics of the water, the treatment was never considered successful. After treatment, the water was kept in a closed system from the time it left the plant until it had been injected. Natural-gas seals were used at all points in the water system where vacuum could exist, to prevent entry of air and its resulting corrosion and instability effects. Water-injection rates varied during the period, but the maximum was 25 barrels per day per foot of sand, with an average of about 8 barrels.

In the fall of 1939 an open-end 7-spot flood was started, using wells No. 13, 23, 44, 53, and 124 as injection wells, with No. 45 as the center producer and No. 138 as a producer at the open or downdip end. Due to the original drilling pattern of the field, and also due to the fact that it was considered economically necessary because of the depth to use old wells, the only suitable water-flooding pattern was the large 7-spot. This was not particularly ideal due to the narrowness of the field, but it was considered better than the use of a line flood. Nos. 15 and 174 also were converted to water-injection wells for the purpose of partly completing the adjoining 7-spot to the west, centering around No. 43. The distances from the water-injection wells to the center producer vary between 670 and 730 feet. Injection into this 7-spot has been suspended pending completion of the 7-spot to the east. Oil recovery by water flood inside this 7-spot has amounted to 1600 barrels per acre, which is 42 percent of the volume recovered previous to flooding.

In the spring of 1943 Nos. 18, 47, and 64 were converted to water-injection wells, with 46 serving as the center producer and 116 as the open-end producer.

Another experimental open-ended 7-spot was started in the fall of 1941, with old wells Nos. 106, 107, 119, 129, and 131 as injection wells—using 114 as the center producer and 169 as the open-end or downdip producer. No. 127 adjoining this 7-spot also was converted to an injection well. The injection-well to producing-well distances range from 670 to 690 feet. Recovery by water flooding inside this 7-spot has been 430 barrels of oil per acre, which is 31 percent of the total recovered previous to flooding. Natural and gas-injection oil recoveries on this east end of the field indicate the presence of the leanest producing pay section in the field.

TABLE 1
Typical Water-Injection Rates and Pressures

NO. 45 SEVEN-SPOT

Well No.	13	23	44	53	124	Average
Thickness of pay sand (feet)	15	14	13	17	11	14
Accumulated water injected (thousands of barrels)	137	92	127	115	104	115
Input rate, daily average (barrels)	87	88	120	74	101	92
Input rate, daily maximum (barrels)	265	150	175	225	170	....
Input rate per foot of sand, average (barrels)	5.8	6.3	9.3	4.4	9.2	8.2
Input rate per foot of sand, maximum (barrels)	17.6	10.7	13.5	13.2	15.4	....
Tubinghead pressure, maximum (pounds per square inch)	Vacuum	Vacuum	120	140	750	....

NO. 114 SEVEN-SPOT

Well No.	106	107	119	129	131	Average
Thickness of pay sand (feet)	11	11	8	11	16	11.4
Accumulated water injected (thousands of barrels)	121	93	91	121	93	104
Input rate, daily average (barrels)	142	133	103	173	118	132
Input rate, daily maximum (barrels)	250	200	210	250	210	....
Input rate, per foot of sand, average (barrels)	12.9	12.1	12.9	15.7	7.4	11.6
Input rate per foot of sand maximum (barrels)	22.7	18.2	26.3	22.7	13.1	....
Tubinghead pressure, maximum (pounds per square inch)	525	850	650	550	550	....

Quantity of Water Injected

The tabulations of "water-injection rates and pressures" in Table 1 show a wide variation of average water-input volumes ranging from 4.4 to 15.7 barrels per foot of pay sand, with maximums as high as 26 barrels. These variable input rates were caused largely by the manner in which the floods grew, particularly during the early experimental period. In one or more cases the injection wells on one side of a 7-spot received a large share of their required water volume before injection had been decided upon, and started into the wells of the opposite side. This required that the first wells utilized in the 7-spot be practically shut in until the flood had been balanced. There were shortages also of input water during certain of the early periods of the flood program. Input volumes were sharply reduced on certain wells because they were found to be definite sources of channeling water, which tended to choke the oil output of the center producer.

Change of Injection Rate with Time

The input capacity of the injection wells is probably a little lower than it was when injection was started but, in general, the reduction in rate is of small consequence. The small change in rate can be accounted for by "filling up," although there is a possibility that some precipitation of dissolved solids in the water may have occurred, as air was known to have gained entry to the system for a short time. The precautionary features of the equipment now used practically eliminate the possibility of plug-

ging the sand with suspended solids carried by the water.

Certain wells, including many on the downdip edge of the field, have much tighter sand sections than others. Maximum tubinghead pressures have been limited to 1000 psi, which amounts to about 2300 psi on the sand face for the average 3000-foot well. Because this is well below the theoretical overburden lifting pressure, no sudden breaks in the input-pressure curves of these wells have ever been noted that might indicate an overburden "breakthrough." As mentioned previously, this has not actually been confirmed by test, but sufficient data have been taken for confirmation.

Injection-Well Completions

All injection wells have been converted from old wells. Original producing-well completion practice for the average 3000-foot well included a string of 8⅝-inch casing set at about 1700 feet through the water-bearing Salt sand and a 7-inch oil string set at about 2360 feet in the top of the Big Lime. The Big Lime was left uncased, and a 5½-inch liner extended from there to the Berea. In later years all the liners wre pulled, leaving about 600 feet of open hole above the Berea. In this interval the Big Lime, as well as the Weir sand, sometimes produces small quantities of gas. Immediately on top of the Berea sand is the Coffee shale, about 12 feet thick. The wells were originally shot with from 4 to 5 quarts of nitroglycerin per foot of pay sand, and many of the wells have had a second—and occasionally a third—shot of about 10 quarts per foot of pay sand.

A caliper survey was run on two of the wells before conversion for water injection. The survey at No. 64 showed that the hole through the pay sand varied from 11 inches in diameter to an unknown maximum size beyond the 30-inch diameter range of the caliper. This well had been shot 3 times previous to the survey with 40, 80, and 60 quarts, respectively. The calculated volume of the hole through the 11 feet of pay was about 35 cubic feet. The same approximate condition existed in the other well that was calipered. It was interesting to not that the Coffee shale immediately above the Berea showed considerable cave, and in one of the wells surveyed the maximum diameter through this section was beyond the 30-inch-diameter range of the caliper. Both wells showed not over a 5-foot interval of the nonproductive Berea cap in which the hole diameter was small enough to provide an adequate packer seat.

Method of Conversion

Until very recently the method of converting these wells for injection was as follows:

The shot hole was cleaned out and 2-inch tubing with a special 7x2x16-inch gas-anchor packer was set in the Berea cap. It was very difficult to find a place in the hard cap sand in which a packer would hold. In most wells it was necessary to run the packer two or more times before an adequate seat was found. The packer seal was checked by equalizing the formation-gas pressure in the annulus and in the tubing; and then, with a recording gauge on the annulus, the pressure in the tubing was blown off. If the pressure in the annulus continued to hold, it was assumed that the packer was seated adequately. Although all the jobs completed in this manner have been successful, it is considered hazardous because, even though the packer holds 20 to 30 psi gas pressure, there is no assurance that it will hold a 200- or 300-foot column of cement.

TABLE 2

Chemical Analysis of Injected Salt Sand Water and Produced Water

	Injection of Salt Water after Passing Sand Filter (Grains per Gallon)	Produced Water from Well No. 45* (Grains per Gallon)
Iron—Fe	0.25	Trace
Calcium—Ca	99	246
Barium—Ba	9.4	3.3
Magnesium—Mg	17.6	37.5
Sodium—Na	450	832
Potassium—K	Trace	Trace
Bicarbonate—HCO_3	17.0	6.6
Carbonate—CO_3	0	0
Sulfate—SO_4	0.2	0.59
Chloride—Cl	889	1,820
Bromide—Br	57.3	8.5
Iodine—I	Trace	Trace
Total solids—determined	1,540	2,957
Total solids—after evaporation	1,508	2,897
Specific gravity	1.0143	1.0321
pH value	4.75	4.8

* Sample taken after well has produced 2,000 accumulated barrels of water over a 7 months' period, at which time this well has produced 45 percent of its ultimate flood oil.

After the packer test had been taken, about 1 cubic foot of small mud balls was dropped down the annulus on the packer. A string of 1-inch extra-heavy tubing was then run down the annulus to the packer, and about 35 sacks of quick-setting cement was then pumped down the 1-inch macaroni pipe to the top of the packer, after which the 1-inch tubing was pulled. This amount of cement usually filled up about 200 feet of the hole. After the cement had set, the annulus was filled to the surface with local mud.

The foregoing procedure is very hazardous and the result uncertain, particularly the running of a 1-inch macaroni string down a 3000-foot annulus. The use of this small pipe also necessitated using a very thin cement slurry.

Because there were some wells in which a packer could not be set at any point in the Berea, due to previous shots and fishing jobs in the cap rock, it was decided to adopt a procedure eliminating the use of a packer entirely. Using an especially made dump bailer, a cleaned-out shot hole was filled with washed gravel to about 5 feet above the pay—grading the gravel from about ¾ inch at the bottom to pea size at the top. About 4 feet of washed, fine Ohio River sand was then dumped on top of the gravel. Following the running of 2-inch tubing to within 2 or 3 feet of the sand bed, with 5½ x 2-inch swage on the bottom, 4 percent aquagel was pumped down the tubing and up the annulus to the surface, after which the tubing was set down into the sand bed. The 1-inch macaroni string was then run down the annulus and the 2-inch cemented in place, the same as in the first procedure. The macaroni string was removed from the annulus and then run down the inside of the 2-inch tubing to the top of the dumped sand. Filtered water was then pumped down the 2 x 1-inch annulus and up the 1-inch—washing out the gel and the sand until the well was considered taking sufficient water. The macaroni string was then pulled and water injection started.

To eliminate the hazard of running the 1-inch macaroni pipe and to hasten the placing of the gravel and sand in the shot hole, the process was again changed. The procedure, as now practiced, consists of cleaning out the shot hole as usually, and then running 3-inch regular tubing to the Berea cap. The same amount of gravel and sand as described in the previously used method is then poured down the inside of the 3-inch tubing rather than dumped with a bailer; 5 percent aquagel is then pumped down the tubing and up the annulus to the surface, after which a one-plug cement job is performed through the tubing—stopping the plug a short distance above the bottom of the tubing. The tubing is then set down into the sand bed, and the tubing and casinghead shut in to allow the cement to set. After the tubing has been swabbed, the plug and cement are drilled out, and with the use of a sand pump the sand bed is cleaned until water passes through at a satisfactory rate. This method of completing injection wells is superior to the previous methods, but there are still some disadvantages. Completion with the gravel and sand in the shot hole eliminates the future use of selective plugging agents except for those which would be in solution. Surveys in the shot hole, which later may be desired, would also be impossible. It would be possible, however, to clean out the shot hole for such surveys through the 3-inch tubing, but it would of necessity be a slow and expensive job. One particular advantage of having the gravel and sand bed in the hole is that any suspended matter in the water entering the well will be deposited on the sand bed rather than on the pay face, the sand bed acting as a safety filter. Any plugging of the sand bed can be readily cleaned with a sand pump or, in most cases, by swabbing.

Injection-Well Cleanout Practice

One of the early wells which was completed with a packer and a native-mud load without cement eventually lost its packer seat due to the excess pressures applied. Some of the clay above the packer reached the pay sand and plugged it completely. When the packer was removed for reconditioning the hole, no trace of the clay was found in the shot hole. The well was cleaned out, shot, and the adopted improved method of completion used. The intake capacity of the well was increased, but was still considerably lower than before the packer-seat failure. The well was then swabbed, recovering a large quantity of clayish material which may have been the native clay used for the original packer load or salt-water-contaminated aquagel which may have found a path around the dumped sand bed into the pay sand. Complete tests have not been taken since that time, but there is every indication that the intake rate will be satisfactory.

There has been no occasion for using other known methods of injection-well rejuvenation. No selective plugging has been tried; but, due to the wide variation of permeabilities of the sand, it is felt that the overall success of flooding this field may hinge on its development. It is hoped that some tests along these lines can be started in the near future. Methods of application, as well as the type of plugging agent that will be suc-

cessful, conceivably will be different from those required in shallower fields where new wells are drilled and the pay section is thicker.

Injection-Well Surface Equipment

Each injection well is equipped with a meter, an especially designed "Aloxite" filter assembly, input-rate adjusting valves, and a gas seal on the tubinghead. The filter consists of a 6⅝-inch-OD by 2½-foot-long pipe mounting for a cylindrical "Aloxite" stone. This stone consists of chemically-refined, inert, crystalline alumina grains of selected size which have been ceramically bonded together to give a filter medium of known and uniform porosity and permeability. The assembly is arranged for backwashing as required. Two small plug-type globe valves are arranged in parallel for adjusting input rates. The entire well head and equipment in the past have been covered with a sheet-iron building, about 10 feet square, which is heated in the winter. The newer wells are equipped with a small steel housing just large enough to cover the equipment, arranged to slide out of the way for inspection purposes.

Some trouble has been experienced with the gas seals on the tubingheads of the injection wells. These seals are fed from the low-pressure field fuel system through a small regulator and check valve to the tubinghead. At certain injection rates and pressures the check valves operate at a critical point, allowing water to seep slowly through them and enter the fuel system. The fuel system drowns out and shuts down an entire section of the field from lack of gas. The use of a smaller check valve seemed to be the logical answer; but, due to the risks involved, it was decided to build a simple float-operated check valve which would be more positive and foolproof.

Source of Flooding Water

Water for flooding operations was obtained by plugging back and recompleting non-productive oil wells in the Salt sand. This sand varies from 250 to 300 feet in thickness, an unknown portion of which is water-bearing, and is found at a depth of about 1200 feet in the average well. Source water-well completion includes the setting of a 7-inch perforated liner through the sand. The wells are pumped with a standard rig using 3-inch tubing. No attempt has been made to increase the water productivity of the wells by shooting or other means because of the variable peculiarities of the sand from well to well. Initial salt-water production per well varies from 550 barrels per day to 185 barrels per day, with an average of about 420 barrels per day. Even though well spacing has been purposely kept at about 1300 feet, the decline in water production has been very rapid, amounting to about 20 percent per year.

Chemical Characteristics of Flooding Water

Table 2 shows the chemical analysis of injection salt water after it has passed the sand filter at the main pumping station. Because of the method of handling the water through a completely closed system, there has been no precipitation, algae, or corrosion problems—except for one short period when a small amount of air entered the system causing rapid corrosion of lines. Additional precautionary measures were taken which solved this problem. Table 2 also shows analysis of the water produced from No. 45 when salt water was being used for injection.

TABLE 3

Chemical Data of Untreated and Deaerated Fresh Creek Water†

CONSTITUENT	Untreated Water at Creek	Untreated Water at Plant Intake‡	Deaerated Water at Plant Discharge	Deaerated Water at Water-Injection Well
	(PARTS PER MILLION)			
*Oxygen—O_2	8.8	....	None	None
Iron—Fe	1.0	1.2	0.6	0.6
Hardness	256	264	280	280
Methyl alkalinity	30	34	28	28
pH	6.8	....	7.2	7.2

* By Winkler test. † Alum coagulation not used at time of test. ‡ After untreated water from the creek has passed through about 4,000 feet of wrought-iron and 2,000 feet of steel line pipe.

Water Plant and System

As previously stated, the flooding water is kept in a closed air-free system from the time it leaves the source-well producing sand until it reaches the Berea pay in the injection wells. Because of mountainous terrain, a closed system is difficult to maintain—requiring effective protective measures. Water flows by gravity from the source wells to four 250-barrel steel gas-sealed storage tanks near the water-injection plant, through a rapid sand filter, and thence into the power pump in the main injection plant for pumping to the field.

To prevent the entrance of air, each source well is equipped with a low-pressure gas seal on the casinghead. In addition, a 40-foot gas-sealed stand pipe is installed at the well, on the lead line, to prevent the entrance of air through the stuffing box.

The injection plant consists of a 3000-barrel-per-day standard-design rapid sand filter arranged for backwashing by gravity with raw water from the storage tanks. The 3-inch by 10-inch duplex-piston power pump is endless-flat-belt-driven from an 80-horsepower 2-cycle horizontal gas engine. Discharge pressure at the plant is manually-controlled at about 1200 psi.

All pipe lines from the source-water wells to the plant and thence to the injection wells are common steel pipe, some being seamless and some continuous-weld construction. All injection wells are also equipped with seamless-steel tubing.

As mentioned previously, there have been no apparent corrosion problems in the entire system, except during one short period when air was found to have entered the system. At this time several hundred feet of pipe were replaced because of severe pitting along the top inside portion of the pipe.

Expansion and Changes

Expansion of the flooding experiments is now under way. The new project includes 4 contiguous open-end 7-spots immediately west of the flooded-out No. 45 7-spot. Due to the high cost of the previously used Salt sand water, the system has been switched to fresh water available from two nearby creeks. The injection plant has been doubled in size, and the plant system changed to the extent of adding a vacuum water-deaerating tower and of installing spreaders in the storage tanks to convert them to coagulant sedimentation tanks.

With the new setup, creek-water gravitates into an earthen dyke-type lake of about 50,000 barrels capacity. Water from the lake is picked up by a variable-speed motor-driven centrifugal pump and boosted to the top of the vacuum tower located on the mountainside about 90 feet above the plant and 45 feet above the sedimentation tanks. The water then gravitates out of the bottom of the vacuum tower into the sedimentation tanks, and thence to the sand filters and surge tank in the plant for pumping to the field.

Alum and calcium-hydrochlorite solutions are proportionately fed into the raw water at the inlet side of the centrifugal pump, and the coagulated water is clarified in the sedimentation tanks before passing to the sand filters.

The vacuum tower is 24 inches in diameter by 38 feet high, and is packed with porcelain raschig rings. A rotary-type vacuum pump is connected to the top of the tower and maintains a high vacuum throughout the inside, sufficient to boil the water. The construction of the tower is rather simple, and very little operating attention is required. It is believed that its use gives positive water-corrosion control, which is not always the case when corrosion-correcting chemical treatment is used.

The high vacuum removes all of the oxygen (detectable by the Winkler test) as well as other gases in the water. This greatly assists in making the water chemically stable and non-corrosive. Chemical tests made since the completion of this plant are shown in Table 3, "Chemical Data of Untreated and Deaerated Fresh Creek Water." It will be noted that the untreated water, as it arrives at the plant intake, has picked up 0.2 ppm of iron while passing through about 4000 feet of wrought-iron and 2000 feet of steel line pipe en route from the creek. This is proof of the corrosive nature of the untreated water. The deaerated water, however, does not change in iron content or other constituents between the plant and the injection wells in the field, indicating the complete stability and non-corrosiveness of the treated water.

Acknowledgment

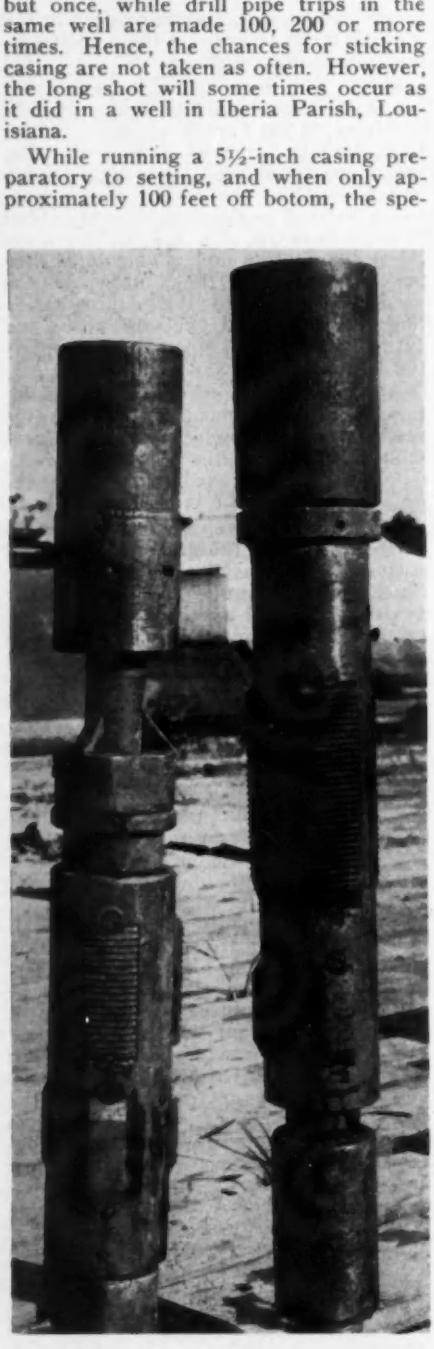
The writer wishes to express his appreciation to the following who have been kind enough to furnish their valued constructive criticism: Messrs. Sam S. Taylor, United States Bureau of Mines; and H. J. Lowe, and R. H. Carr, of The Pure Oil Company.

Cutting and Fishing Stuck Casing

By GEORGE O. IVES, Staff Writer

TO WASHOVER, cut and remove stuck drill pipe from a well is usual, but a similar job for casing is a rarity. In the first place, casing is usually run but once, while drill pipe trips in the same well are made 100, 200 or more times. Hence, the chances for sticking casing are not taken as often. However, the long shot will some times occur as it did in a well in Iberia Parish, Louisiana.

While running a 5½-inch casing preparatory to setting, and when only approximately 100 feet off botom, the special gremlins assigned to the task of agitating drillers and tool pushers caused a valve stem fracture in the engine, shutting down operations. Although shut-down time was less than an hour, it was sufficient for compatriot gremlins in the well to "glue" the casing to the walls of the hole.



The inside cutter, left, and the spear, right, were run in the same string in an attempt to cut and fish with one trip of the operating pipe. Both tools have slips and friction blocks but only the cutter has the wedge fingers and knives under which these surfaces work.

Analysis of the problem of cleaning the hole offered two solutions: By inside cutting or by washing over and cutting from the outside. Consideration included hole and pipe dimensions, safety, cost and loss of drilling time. Because the first solution offered greater safety and least expense, and because the sub-surface dimensions were adequate for inside cutting operations, this method was selected.

In cutting from the inside, there were still two possible methods of attack. It It would be possible to run the inside cutting tool on an auxiliary string of small drill pipe or tubing, cutting the stuck pipe into sections beginning from the bottom. Or, the fish could be cut just below the upper free section, removed, the remaining fish washed over, the inside cutter rerun, and the freed section cut and removed. The first method was discarded due to the danger of dropping or misaligning a cut segment.

Therefore, because of the greater danger of fouling the hole with cutting operations around the outside of the fish and because the large inside diameter presented favorable odds for successfully stabbing the cutting tool into each successive subsurface section, the inside cutting method was used. By running a spear in the same string this method would make it possible to cut and fish with but one run of the operating pipe, and with less possibility of cut sections falling off center.

The inside cutting tool used operates on pipe of a smaller outside diameter than the inside diameter of the fish. Run to the selected depth inside the fish, it is set by rotation and begins cutting operations by application of weight plus rotation. Setting of the tool is accomplished through friction blocks that "wipe" the walls of the fish; initial rotation unscrews the stem which, when lowered, forces tapered surfaces behind slips, causing them to expand and "bite" into the walls of the fish. This anchors the tool. Further lowering of the operating pipe causes wedge arms to force the cutting knives out into the fish. Rotation then accomplishes the cut.

In this hookup, the cutting tool was run on the bottom of 2½-inch tubing. With the exception of the first cut, this section of a 2½-inch tubing was 855 feet long and topped by a spear. The spear has a similar appearance to the cutter; it has no knives, operating merely with friction blocks and slips. By rotating a very small amount, the slips expand on a tapered mandrel, thus "spearing" the fish. If the fish remains stuck and can not be pulled, a slight rotation in the opposite direction releases the tool.

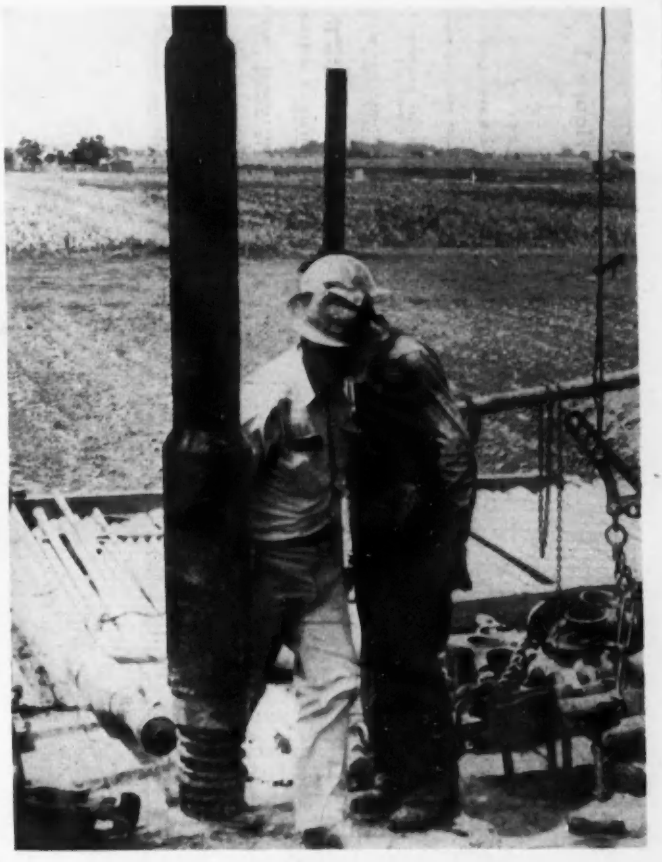
Usually, in cleaning a hole of stuck pipe, the initial cut is made at a depth covering the free or unstuck portion. This depth is determined by strain indication, by examination of a subsurface log—or by guess if nothing else is available. In the case of this well, a strain taken upon the stuck casing indicated by the amount of stretch that the

The washover overshot is a heavy double box sub approximately two feet in length with dogs (shown in the picture) protruding outward that allow passage of the tool down, but catch under the casing collar with an upward movement.

free portion extended to approximately 2700 feet. Consequently, the first inside cut was attempted at 2670 feet—but the pipe failed to pull. Playing cinches, the operator decided to make the next cut just below the seat of the surface string at approximately 1750 feet.

Running the inside cutting tool on 2½-inch tubing to this depth, the cut was made and this amount (1750) of fish was removed from the hole. The hook-up for the next and successive cuts was changed to the extent of running the cutter on 855 feet of 2½-inch tubing, topped by the circulating and releasing spear, which was in turn "subbed" back to the regular drill pipe. The cutting tool was then stabbed into the top of the remaining fish at 1750 feet and penetrated for the entire 855-foot length of the 2½-inch tubing. The spear was equipped with an oversized bumper ring that would not pass into the fish. As soon as this ring rested on the top of the fish, the tool operator raised the assembly 10 feet, withdrawing the spear to a position just above and set the cutting tool at that depth within the fish.

By rotation of the operating pipe to the right, the cutting tool was released for operation. Slowly lowering, the operator knew the tool was anchored as soon as the weight indicator "fell off." The time required for completing the cut was usually around 35 or 40 minutes, but sufficient extra time was allowed to "make sure." The completion of the cut was indicated to the operator by the variation of resisting torque in the operating string, by harmonic vibrations in the rotary chain drive—by a sixth sense.



Running the jackscrew releasing overshot. After the sixth cut, and upon failure of the washover overshot due to the tool becoming fouled with mud and shale, it was necessary to retrieve the fish with this type of fishing tool. This overshot is designed to catch the outer walls of the pipe through means of slips operating on a tapered ring. If the fish can not be pulled, a release is accomplished merely by rotating the operating pipe.

Due to the fish being off-center in a washout of the hole, it could not be stabbed with the inside cutter. A mule shoe type of nose piece was welded over the conventional bull plug nose of the cutter, allowing the operator to "walk" the tool to the inside of the fish by application of weight and rotation.

On this particular job after making the cut, the operating string was lowered until the bumper sub of the spear again rested upon the top of the fish. The spear was then set by rotation and an upward movement of the pipe anchored the spear to the fish. In all cases, the cut section was sufficiently stuck that it could not be removed by means of the spear. Consequently, the fish was released from the spear and the operating string withdrawn from the hole. This necessitated an additional fishing job for each cut.

In cleaning the bore, it was necessary to run a rotary shoe on 871 feet of 7⅝-inch wash pipe. This section was topped by an ordinary washover overshot which was in turn run below two additional joints of 7⅝-inch wash pipe. This was swedged back to the regular drill pipe. Washing over operations were conducted around the fish until the dog overshot reached the first coupling of the stuck casing. The tool operator then "felt" for this position by withdrawing the operating string. If the overshot had caught, the additional load of the 855 feet of fish was shown on the weight indicator. The overshot was successful in catching and retrieving the first six cuts without difficulty.

After successfully removing approximately 6000 feet of this stuck casing from the bore, the only major difficulty of the whole operation arose during the removal of this sixth section. The cut was made and the attempt to retrieve this portion of the fish with the spear was unsuccessful. The above described washing-over operations were conducted down to the depth at which the overshot should have caught under the topmost casing collar. An upward movement of the operating pipe at this point revealed no load pick-up, indicating to the tool operator that the overshot had not caught the fish. As the tool was definitely over the fish, the only explanation for the failure of the overshot to function lay with the "dogs" or the protruding elements that bind under the collar of the fish. It was believed, and later proved true, that shale and mud together caused the dogs to adhere to the body of the tool rather than protrude outward in their normal catching position. When it was found that pump pressure on or off, great or small, that many, many short trips up and down, that all the tricks known to the tool operator would not bring up the fish in this trip, the operating pipe was withdrawn from the hole. Another type of overshot was then run into the hole to retrieve the fish.

In attempting to make the last cut, trouble was experienced in stabbing the cutting tool within the top of the fish. After one attempt, the tool was withdrawn and the ordinary bull plug nose on bottom was faced with a "mule shoe" type of nose piece welded on at the rig. This mule shoe nose piece or guide, having an offset ridge supported by flat surfaces, enabled the tool to "walk" itself to the inside when rotating on the top of the fish. After locating and setting thereon with the cutting tool, it was successfully stabbed and the final cut made. Again the spear was unsuccessful in removing the remaining portion of the fish and washing over operations were necessary. The hole was finally cleaned when the last section of fish was removed by means of the washover overshot.

Grateful acknowledgment is made to the Cutting and Fishing Department of Houston Oilfield Material Company for furnishing all the data and accompanying photographs.

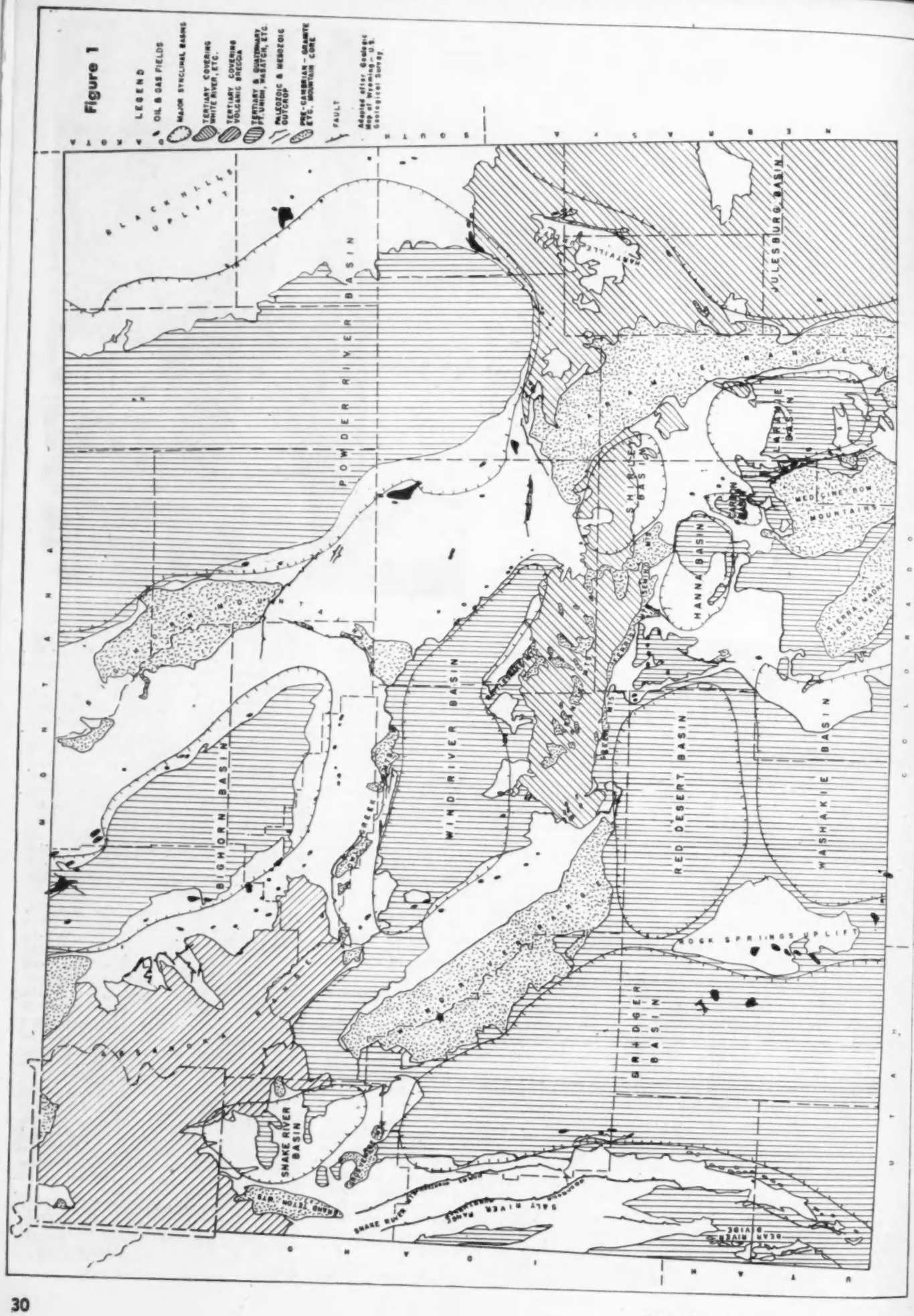


Figure 1
LEGEND
OIL & GAS FIELDS
MAJOR SYNCLINAL BASINS
TERTIARY, COVERING WHITE RIVER, ETC.
TERTIARY, COVERING VOLCANIC BRECCIA
TERTIARY & QUATERNARY FT. UNION, WASATCH, ETC.
PALEOZOIC & MESOZOIC OUTCROP
PRE-CAMBRIAN - GRANITE ETC., MOUNTAIN CORE
FAULT
Adapted after Geologic Map of Wyoming - U.S. Geological Survey
MONTANA
SOUTH DAKOTA
NEBRASKA
COLORADO
UTAH
NEVADA
BLACK HILLS UPLIFT
POWDER RIVER BASIN
JULESBURG BASIN
LARAMIE BASIN
SHIRLEY BASIN
HANNA BASIN
MEDICINE BOW MOUNTAINS
SIERRA MADRE MOUNTAINS
WIND RIVER BASIN
BIGHORN BASIN
RED DESERT BASIN
WASHAKIE BASIN
ROCK SPRINGS UPLIFT
BRIDGER BASIN
SNAKE RIVER BASIN
SALT RIVER RANGE
SNAKE RIVER
GREEN RIVER

Part 1
General Geologic Features

By PIERRE LaFLEICHE
State Mineral Supervisor, Casper, Wyoming

THE presence of oil in Wyoming has been known almost since the arrival of the first explorers. Bonneville mentions it in 1832, with actual operations conducted shortly after the Civil War. But notwithstanding the subsequent development of many prolific oil and gas fields, exploration has not been as intensive or sustained as in many of the other producing areas.

This may be accounted for to a certain extent by the geographic location of the state relative to large consuming centers and the lack of competitive transportation facilities, to which may also be added certain traditional geologic interdictions and the psychological factor. To the latter may be ascribed the tendency of the oilman to follow the crowd. Periodic discoveries of major importance in the Midcontinent and adjacent areas caused a concentration of interest and activity in the locality of latest discovery and obscured the prospects of regions more remotely situated, however, favorable.

The general lethargy, a resultant of cyclic national overproduction of the prewar era and the complacence attending authoritative assurances of abundant petroleum reserves, was rudely disturbed by the advent of war and the sudden realization that the demand was insatiable. It became apparent that economic security, both for the individual and the nation, was dependent upon the timely finding of new and greater petroleum reserves. Thus spurred by the manifest necessity of increased exploration and production, the attention of the industry was directed to the great areas of prospective but relatively untested lands of the Rocky Mountain province. Wyoming, being definitely established as a petroliferous area, its oil and gas fields lying in nearly every part of the state, and many parts of its great basin areas having been earmarked for future exploration, became the focal point of a renewed interest and activity. Many new operators moved into the state and geological and geophysical parties became engaged in the most extensive survey in its history.

The results of this activity during the past three years have exceeded the most sanguine expectations. The ratio of new field and new pool discoveries to the number of exploratory wells drilled is believed to be the highest in the nation and indications are most promising for its continuance.

The surface of the state as a whole is a high, semiarid plateau broken by mountain ranges whose axes are generally parallel and trend southeast to northwest. Elevations above sea level range from a minimum of 3125 feet in Crook County, in the northeastern part, to a maximum of 13,785 feet, the summit of Gannett Peak, in Fremont County, in the west central part.

The mountain ranges of Wyoming constitute the east front of the Rocky Mountain system. Because the diastrophism of the region and the resultant intense folding was a major factor in effecting the formation of the oil and gas fields, the location and general scheme of the main uplifts and complementary synclinal basins is of great importance. A pictorial representation of these features is shown in Figure 1.

In the northeast corner of the state are the Black Hills, a low domal fold, which is extended south by a narrow anticlinal fold prominently exposed in the Old Woman anticline and terminating in the Hartville unlift, an extension of which forms a connecting link with the Laramie Range to the west. A line of major folding extends from the southeast, thence across the north central part of the state, forming on the south the Laramie range and on the north the Big Horn Mountains. Directly west of the Laramie Range and in the extreme southern part of Wyoming are the Medicine Bow and Sierra Madre mountains. North of these a spur from the Laramie Range extends in a westerly direction, forming successively the Shirley, Semino, Ferris and Green Mountains, northwest of which rises the lofty Wind River Range. Joining the southern end of the Big Horn Mountains and running west are the Owl Creek Mountains, the western end of which swings northward and joins the Absaroka Range, which in part forms the east boundary of Yellowstone National Park. Along the western limits of the state from south to north, respectively, are the Salt River, Snake and Teton mountains. East of the Snake and between the Snake and the Wind River mountains is the Gros Ventre Range, an east-west fault scarp.

Between the mountain ranges are the large synclinal basins. Although there have been various names applied to some of the basins, those used herein are believed most commonly accepted. A brief description of the location and extent of these basins is as follows:

Powder River Basin, with a length of some 160 miles in Wyoming and width of about 120 miles, comprises an area of approximately 17,000 square miles. It lies in the northeastern part of the state between the Black Hills on the east and the Big Horn Mountains on the west. The Hartville uplift forms the southern limits.

The northwest part of the Julesburg (Denver) basin extends north into southeastern Wyoming, the north limits being defined by the Hartville uplift and the west by the Laramie Range. That portion of the basin in Wyoming covers about 5500 square miles.

West of the Julesburg Basin is the Laramie Basin, lying between the Laramie Range and the Medicine Bow Mountains. It has an area of approximately 1400 square miles.

The Hanna-Carbon basins are formed on the south by the Medicine Bow Mountains, on the north by the Freezeout, Shirley and Semino uplifts, and on the west by the Rawlins uplift. Division of these basins is effected by the Saddleback anticline, the Carbon Basin lying on the east and the Hanna Basin on the west. The area of the two basins is about 1500 square miles.

Shirley Basin is a small structural depression north of the Shirley Mountains and west and south of the north arm of the Laramie Range. Its areal extent is approximately 1000 square miles.

Northwest of the Shirley Basin and in about the central part of Wyoming is the Wind River Basin, so called because nearly all its area is occupied by streams tributary to the Wind River. The north limit of this basin is formed by the Owl Creek Mountains, the east by a line of folding connecting the Laramie and Big Horn mountains, the south by the Granite and Rattlesnake mountains and the west by the Wind River Range. Approximately 3200 square miles comprise the area of this basin.

North of the Wind River Basin and

between the Big Horn Mountains on the east and the Absaroka uplift on the west is the Big Horn Basin, the Owl Creek Mountains forming the southern boundary. This basin occupies an area of some 4000 square miles.

Much of the southwestern part of the state is occupied by the great Green River Basin. This basin in its entirety includes nearly all the area drained by the Green River in Wyoming, but, strictly speaking, it is divided into two large basins, namely, the Great Divide and the Bridger. The Great Divide is further divided into the Red Desert and the Washakie basins.

The Red Desert Basin includes that area bounded on the north by the Green Mountains and the southern end of the Wind River Range, on the west by the Rawlins uplift, on the south by the Wamsutter arch which roughly parallels the Union Pacific Railroad between Rawlins and Rock Springs, and the Rock Springs uplift on the west. This basin has an area of about 3000 square miles.

The Washakie Basin lies south of the Red Desert Basin and between the Sierra Madre Mountains on the east and the Rock Springs uplift on the west. The north boundary is the Wamsutter arch. Its area is about 3500 square miles.

The Bridger Basin is between the Rock Springs uplift and the Wind River Range on the east and the uplift formed by the Spring Valley and Meridian anticlines and the Absaroka and Darby fault systems on the west. The Gros Ventre Mountains form the northern limits. The area of this basin within Wyoming approximates 9500 square miles.

A small basin with an area of about 1700 square miles lies north of the Gros Ventre Mountains, the west side being formed by the Teton Mountains and the east by a projection of the Wind River Range. The northern limit is not clearly defined but probably lies near the southern boundary of the Yellowstone National Park. This basin is here called the Snake River Basin from the stream which flows through it.

The area of the major basins above mentioned is about 51,300 square miles. Description of many of the smaller basins and uplifts of minor importance has been purposely omitted. The area of these is about 23,000 square miles. Those areas which may be definitely eliminated as having no prospective oil or gas value total about 20,000 square miles of the mountainous regions from which all, or nearly all, the sedimentary strata are eroded. (See Figure 1.) To these may be added the Yellowstone National Park, which has an area of 3438 square miles, primarily for the reason that it is doubtful that entry for oil and gas prospecting would be permitted, although it may be said that certain parts are not entirely of unfavorable aspect.

General Geology

The sedimentary series of rocks in Wyoming are typical of those found elsewhere in the region along the east front of the Rocky Mountain uplift. Facies changes are prevalent in some formation members, and formation thickness may vary to a considerable extent from one part of the state to another. However, the rate of change from one particular point to another is usually more or less uniform. Geologic studies of the state have been more or less of a patchwork proposition and geologic names of both formations and formation members are often varied and confusing. Even after thorough study definite correlation is, in many cases, a difficult matter. A chart, entitled "Tentative Correlation of Geologic Formations in Wyoming," prepared by M. Grace Wilmarth of the United States Geological Survey, is the most authoritative handy reference which may be obtained on the geologic nomenclature of the state.

The stratigraphy and general geology of the eastern two-thirds of the state has received most attention by state, government, and private geologists, and, while in no way exhaustive, much valuable information may be obtained from such sources. The western third of the state has, however, been given less consideration and deserves further survey and study.

Missing Formations

Within most of the basin areas sedimentary rocks of every system from Cambrian to recent are present but approaching the uplifts, erosion has successively removed the younger rocks until along the crests of the mountain ranges pre-Cambrian granites and schists are generally exposed. Of the rock series, however, the lower Cambrian is missing as is the middle Cambrian except in the extreme western part. Likewise generally absent seem to be rocks of the lower and middle Ordovician, the Silurian, and lower Devonian, although paleontological studies may yet prove that such strata are present but now otherwise classified. (See Figure 2.)

The Cambrian of Wyoming consists primarily of quartzitic sandstones and shales and rests upon granites and schists. In the extreme southwestern part of the state, however, some deposition of pre-Cambrian sandstone, shales and conglomerates underlies the Cambrian.

Strata of the Paleozoic group from the Cambrian through the Mississippian are primarily limestone with some shales and sandstones; the Pennsylvanian, however, is primarily sandstones with some shales and limestone. The Permian is for the most part limestone and red shales; the Triassic, red shales and sandstones with beds of anhydrite and gypsum; and the Jurassic principally gray and green shales, sandstones and limestones, representing in part some fresh water deposits but mostly marine. The Cretaceous is predominately shale and sandstone formed under moderate to shallow seas. But the lower Cretaceous is primarily a fresh water continental deposit consisting of sandstones with shale breaks. During the later Cretaceous a transition from marine to fresh water conditions occurred, beginning about the time of the deposition of the Fox Hills formation, continental conditions thereafter persisting throughout the Tertiary. Many valuable coal deposits are found in the Cretaceous, especially in the western part of the state, and the lower members of the Upper Cretaceous are characterized by extensive deposits of volcanic ash known as Bentonite. The Tertiary is of nonpelagic origin and continental, consisting of sandstone, shales and coal beds.

The sedimentary series is thinnest in northeastern Wyoming and thickens to the west, southwest and south, reaching the greatest thickness in the south-central and southwestern parts of the state. In the great basins where the sedimentary strata reach a maximum thickness, and are fully represented, the depths to the pre-Cambrian rocks are in the following approximate orders: Powder River Basin, 1800 feet; Big Horn Basin, 17,500 feet; Hanna-Carbon Basin (Bulletin 804, U. S. G. S., by Dobbin, Bowen & Hoots) 35,000 to 40,000; Bridger Basin, 50,000 feet. It is thought that the thickness of the sedimentary strata in the troughs of most of the other basins mentioned will exceed 15,000 feet.

Although the geological succession of the sedimentary strata is generally conformable, some marked unconformities occur, both widespread and local in character.

Formations of the Cambrian system lie unconformably on the older rocks. The Upper Ordovican is unconformable with the Cambrian the Middle and Lower Ordovician being absent. The presence of rocks of the Silurian system and Lower Devonian series is still a matter of inquiry. A marked unconformity is believed to exist statewide, with the exception of in the extreme western and southwestern parts between the Mississippian and the Upper Ordovician. This statement likewise applies to the Jurassic-Triassic contact.

Perhaps the unconformable relation of certain of the Tertiary formations is of most importance, however, because of the large areas covered by strata of this age substantially concealing the structural attitude of older rocks. The present physiography of Wyoming is largely the resultant of the diastrophism of the late Cretaceous and early Tertiary times during which great quantities of erosional debris filled the intermontane basins. Prolonged volcanic activity, also occurring during the Tertiary, accounted for the widespread dissemination of ash and kindred materials component of strata of this age. The Wasatch and Wind River formations of Eocene age covering thousands of square miles present a marked unconformity and in the western part of the state may be found dirictly overlying rocks of nearly any age down to and including the pre-Cambrian. Oligocene and Miocene sediments of the Arikaree and the White River formations effectively blanket an extensive area in the northern and east half of the southeast quadrant of the state, lying on strata of any age from the pre-Cambrian granites and schists to the Eocene. (See Figure 1.) Likewise is the northwest quarter of the northwest quadrant of the state substantially covered by extensive deposits of volcanic materials emanating from the Yellowstone region. Rocks of Tertiary age cover the greater portion of the surface areas of the great basins.

Structure

The diastrophism of the Laramide revolution and later mid-Tertiary disturbances are the controlling factors of the present structural deformation of the entire rock system throughout the state. Crustal movement prior to these times consisted for the most part of relatively gentle undulations of submergence and emergence having more bearing upon the facies aspects of the sediments than upon the formation of local positive and negative structural features of present petroliferous significance. The cumulative orogenic movement has been so pronounced that the present structural attitude of rocks of pre-Tertiary origin is, for the most part, indicative of the structure of the entire sedimentary series underlying.

While studies of the geology of Wyoming have thrown considerable light on general subsurface structural conditions,

much is to be learned concerning the underground structure in the great basin areas. The main mountain ranges, which have been previously discussed, are for the most part long, asymmetrical folds of considerable relief and eroded along the crest entirely down to the basement rocks. Naturally, where the sedimentary strata along these uplifts are progressively exposed, the general structural condition is not difficult to decipher. Along the flanks of the uplifts and generally parallel thereto occur the secondary lines of folding that contain the presently developed oil and gas fields. The surface rocks along such folds are usually of Cretaceous age or older and the structure more or less easily determined, hence the name "Sheep Herders" structures. As we extend out into the basins, however, the structure becomes more difficult of interpretation due largely to the unconformable overlap of the Tertiary sediments. This applies not only to areas in the southeastern part of the state covered by the White River and younger formations and in the northwestern part where volcanic materials are widely spread, but also to the great basin areas in western and central Wyoming covered by the Wasatch and Wind River formations.

Complex Structure

Faulting, often of considerable magnitude, has accompanied the folding of the strata and has in many parts of the state effected a rather complex structural condition. (See Figure 1.) Two overthrust fault systems, the Darby and Absaroka, extend nearly the entire length of the western part of the state and have displacements of many thousands of feet. The steep flanks of the mountain uplifts are usually severely strike-faulted, as are many of the steep asymmetrical secondary folds. Most of the anticlinal structures forming the oil and gas fields are traversed by numerous dip faults. As a general statement it may be said that the strike faults are primarily of basement origin and the dip faults of more or less superficial extent. In the northwestern part of the state the Heart Mountain overthrust forced Paleozoic rocks of the Absaroka Range eastward a distance of 25 miles or more over strata of early Tertiary age and remnants of the Madison limestone (Paleozoic) may be found lying upon the Wasatch (Tertiary).

A comprehensive areal geologic map of a region will enable one versed in geologic interpretations to obtain a very good conception of the general structural conditions. Such a map has been published by the United States Geological Survey and is entitled "Geologic Map of Wyoming." A study of this map will clearly show the general structural features herein outlined and much detail that a paper of this scope is forced to omit. (See also Figure 1.) Government surveys of some areas are, however, incomplete and further studies will no doubt modify or entirely change the map in some particulars especially in the western part. Also it must be borne in mind that structural deformation, entirely or in large part contained within the areal exposure of a single formation, cannot be shown in a map of this scale.

This article will be concluded in a second installment. Part 2 will discuss the oil and gas fields of Wyoming, their production performance, productive formations, producing depths, types of favorable structures and oil and as prospects.

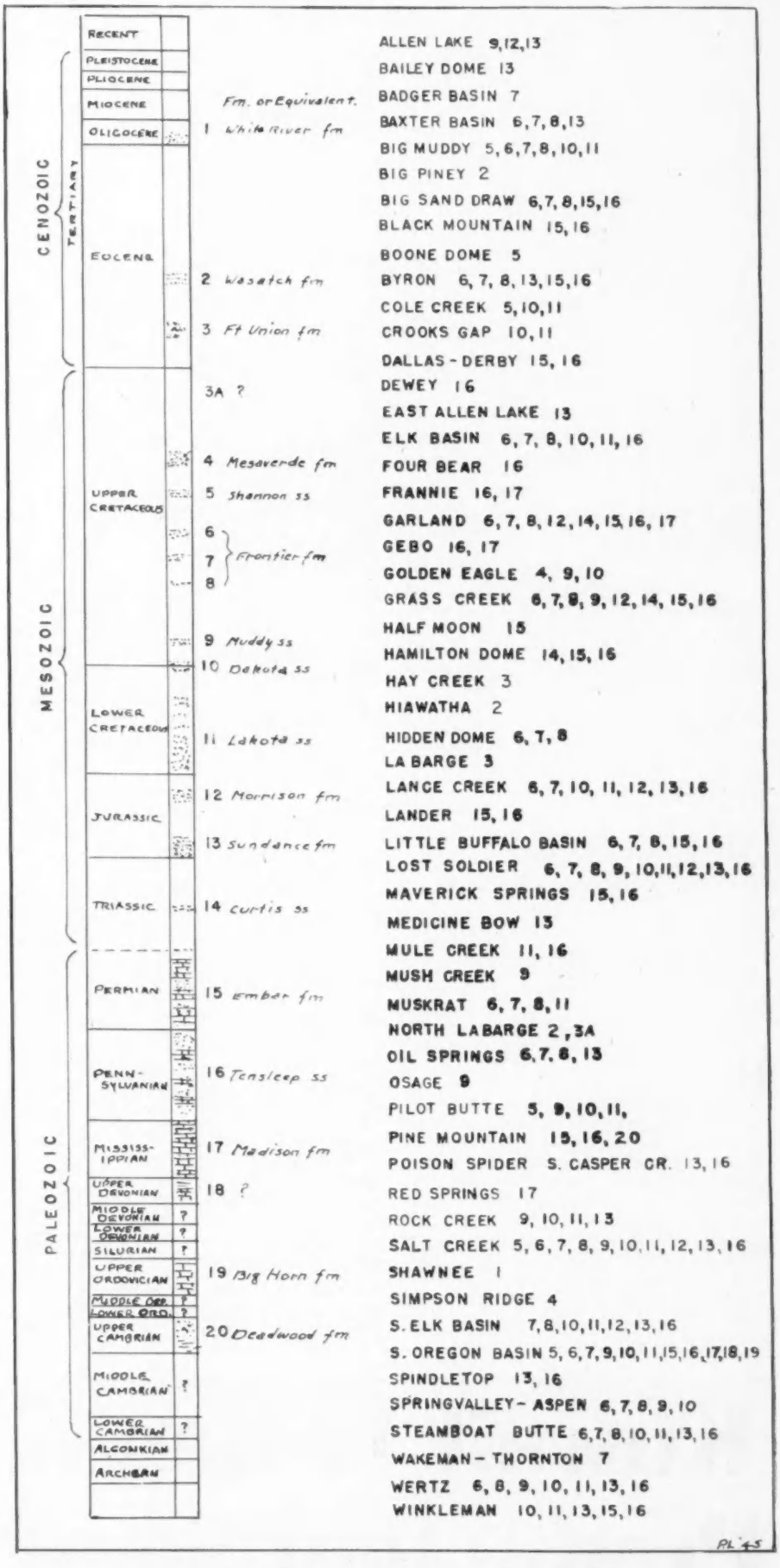
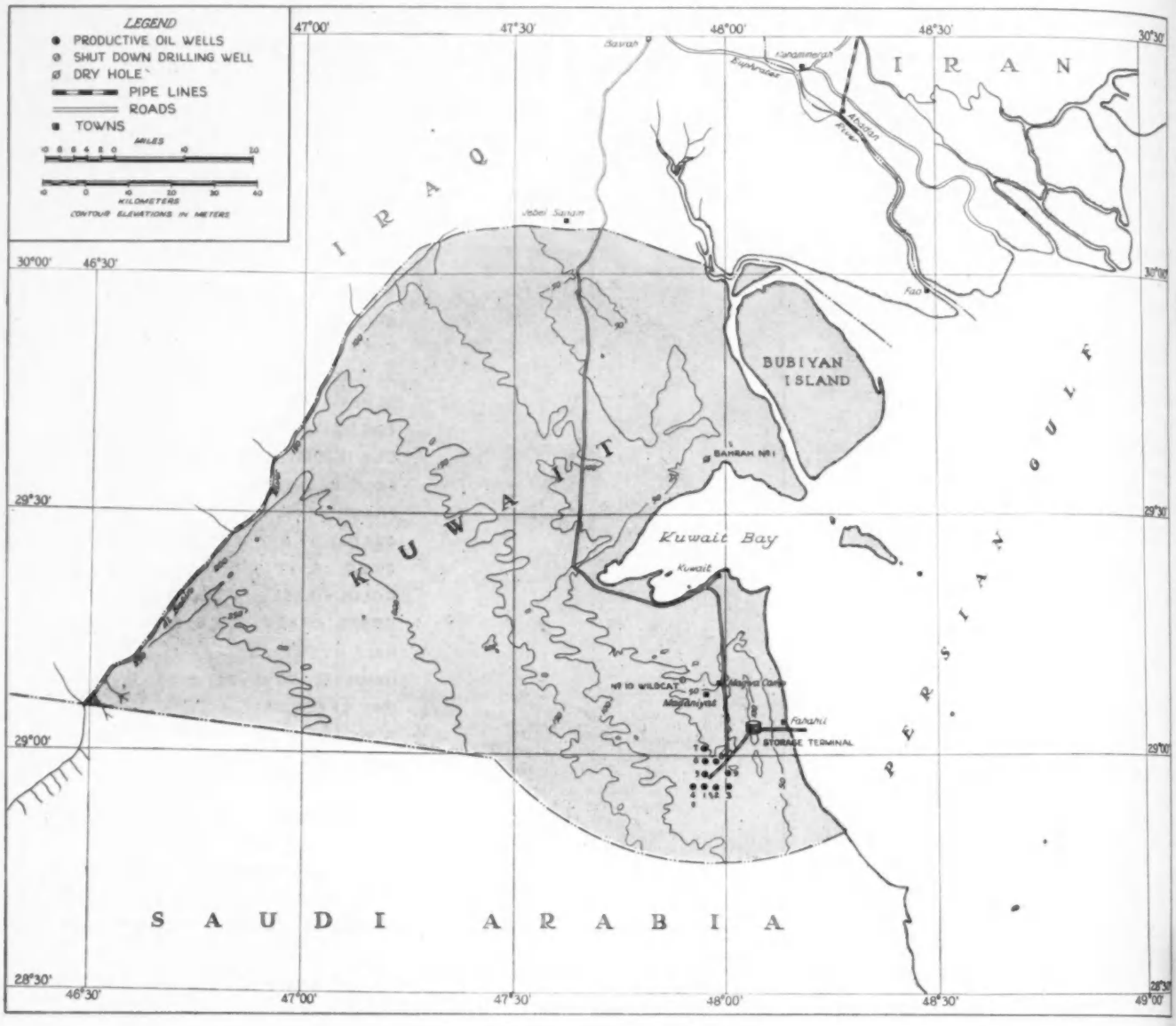


Figure 2. Wyoming productive horizons in typical fields.



By DON L. CARROLL, Staff Writer

Kuwait to Begin Production Soon

PLANS have been completed for initiating producing operations in the seven-year old Burgan field of Kuwait. This field, regarded as one of the world's largest known oil reserves, is in the southeastern part of the Principality of Kuwait, at the head of the Persian Gulf on the heart of the Near East.

With the approval of United States' WPB and British petroleum authorities, Kuwait Oil Company, Ltd., jointly owned by Gulf Oil Corporation and Anglo-Iranian Oil Company, has placed orders in the United States and England for all materials needed to put the field's nine wells in operating condition and to move the production to the Persian Gulf. It is expected that all work will be completed and that the wells will be on production before the end of the first quarter of 1946.

In addition to reconditioning the wells and installing separators and other field equipment, the project involves laying of a ten-mile main pipe line, construction of terminal storage tanks near the coast, an offshore tanker loading berth, and six miles of connecting lines between the berth and terminal tanks.

While it is probable that the Burgan field at its present stage of development could produce more than 75,000 barrels daily, the company anticipates 1946 operations of about half of that rate, and a minimum daily average production of 30,000 barrels. The oil is of 33-gravity, and sour, like other crudes in the Persian Gulf region. Most of the Kuwait oil probably will be shipped to refineries in southern France, via the Mediterranean.

A ten-inch pipe line will be laid from the field to the site of the storage terminal, on a hilltop overlooking the coastal village of Fahahil. This line will be slightly more than ten miles in length. Four welded steel, floating roof tanks, of 139,200 barrels capacity each, will comprise the terminal depot. From that point to the shore, a distance of about 23,000 feet, a 22-inch line will be put in, to feed two 12¾-inch submarine lines out to the loading berth in the Gulf. The two submarine lines will be 5600 feet long.

The crude will be loaded by gravity flow from storage tanks to tanker ves-

sels, by virtue of an elevation differential 360 feet between the two points. Production will be transferred from the field gathering stations to the gravity loading storage tank terminal by diesel engine-driven reciprocating pumps.

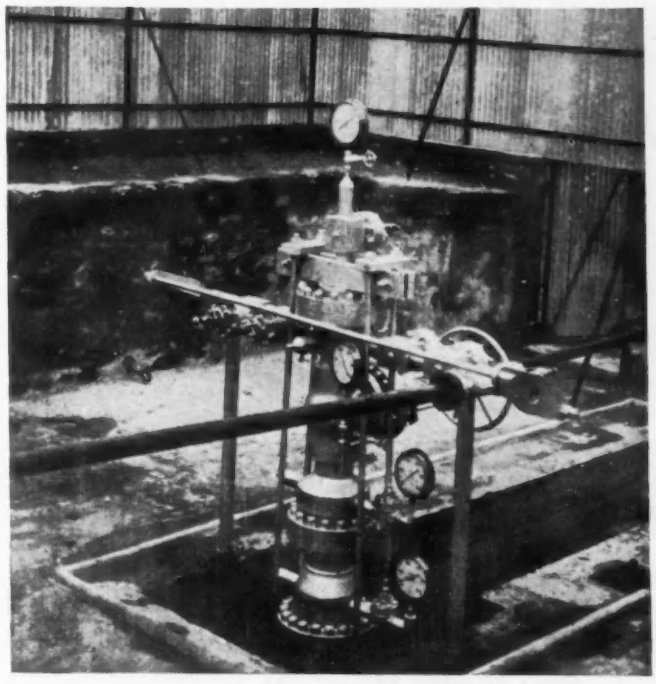
"Reconditioning" of the Burghan wells will mostly involve the drilling out of concrete plugs, since all but one of the holes were sealed in that manner by request of Allied authorities at the time German armies were threatening to overrun the Middle East. The same procedure was followed in most of the other developed fields of the region—even in the cases of the two shutin discovery wells of Iraq Petroleum Company on the Qatar Peninsula.

Two portable rigs will be used at Burgan to reopen plugged holes. Eight of the wells have blank casings to bottom and will be perforated when cleaned out. When the wells were originally brought in they were given initial production tests through open hole, but with choke valves installed.

Four Pays

There are four pays in the producing section at Burghan, occurring as sandstone members in a thick Lower Cretaceous shale formation. No local name has been given to this formation, but it is probably approximately equivalent in age to the producing section at Bahrein Island. It is likely that it can also be correlated with the Rutbah sand of Iraq.

More detailed studies may reveal that the Burgan sandstone pays can be more exactly correlated with the Upper Bahrein silty sands, which are likewise petroliferous but too tight at Bahrein to be considered commercially important. The underlying Lower Bahrein Limestone is the drilling objective in the latter locality.



Well head assembly at Burghan 1. Note corrugated steel enclosure.

An oil-water contact is encountered at Burghan at approximately 4500 feet, in the fourth pay sand. Seven of the wells there were drilled to the water and plugged back for completion. The discovery well, however, was completed in the first pay, at 3692 feet, when a heavy flow of oil was encountered at that depth. Open hole production tests of this well, through one-inch choke, yielded clean oil at the rate of 9000 barrels per day. The well was completed in May, 1938.

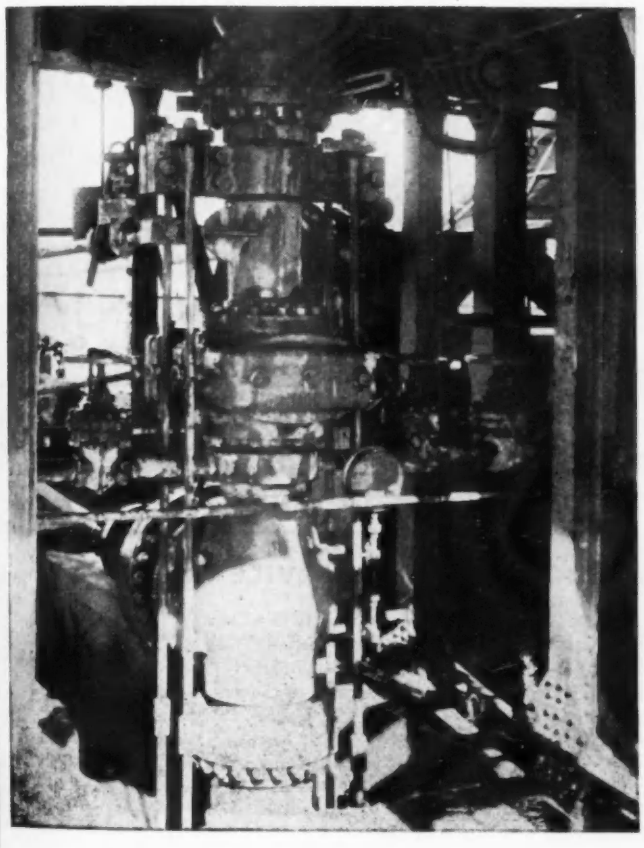
Well No. 2 was taken to 4157 feet, through the first and second pays. Tested in the same manner as in the case of No. 1, with open hole and one-inch choke, it was given a production rating of 10,000 barrels per day. Both of these early wells are to be deepened this year to provide thicker pay sections for testing before final completion.

18,000 Acres Proved

Since the wells at Burghan have been drilled on a spacing grid pattern of approximately 9000 feet, with one inside location not yet drilled, it can be seen that the nine wells drilled there have proved up a minimum of 18,000 acres. Furthermore, the field is only partially developed within the area of closure indicated by geophysical mapping, and therefore probably can be extended in all directions when world market conditions warrant. The outlook for extension to the north of proved acreage is regarded as especially favorable, along the line of the anticlinal trend on which the Burgan high is situated. Elongation of the Burgan dome in a northerly direction is clearly indicated by geophysical interpretation.

Approximately ten miles north of the Burghan field the company began drilling operations in July, 1942, at a wildcat location on another closed structure along the same trend. Drilling was suspended soon after, because of the war, and the equipment moved to Iran for use in Anglo-Iranian operations. The present program for Kuwait includes resumption of drilling at this No. 10 location, probably early this summer.

The main objective of Kuwait Oil Company for 1945, however, is the reconditioning of the nine Burgan wells and the completion of all of them as dual producers. The opening of new fields in Kuwait is but an incidental matter at the present stage, although of greatest potential importance from a long-range view. There are 6000 square miles in the Principality, all covered by the concession contract now in force between the company and Shaikh Ahmed Al-Jabir As Subah.



Below-floor view at Burghan 8, after finishing nippling up the 11¾-inch casing.

AT Republic OUR GUNS A

REPUBLIC'S aim is to provide the oil industry with a convenient, dependable source of supply for *what is wanted when and where it is needed* for every operation. This requires the concentration of supplies and service at the scene of operations and a flexible organization to keep these facilities geared to the constantly shifting requirements of the industry. Likewise, it requires experience plus latitude in the selection and distribution of the many highly specialized products demanded by these specialized operations. Add to this a properly trained staff eager to serve, and you have the ideal supply service.

Republic SCORES A BULL'S-EYE ON ALL COUNTS

Make Your Needs Our Problem

. . . Always Call REPUBLIC

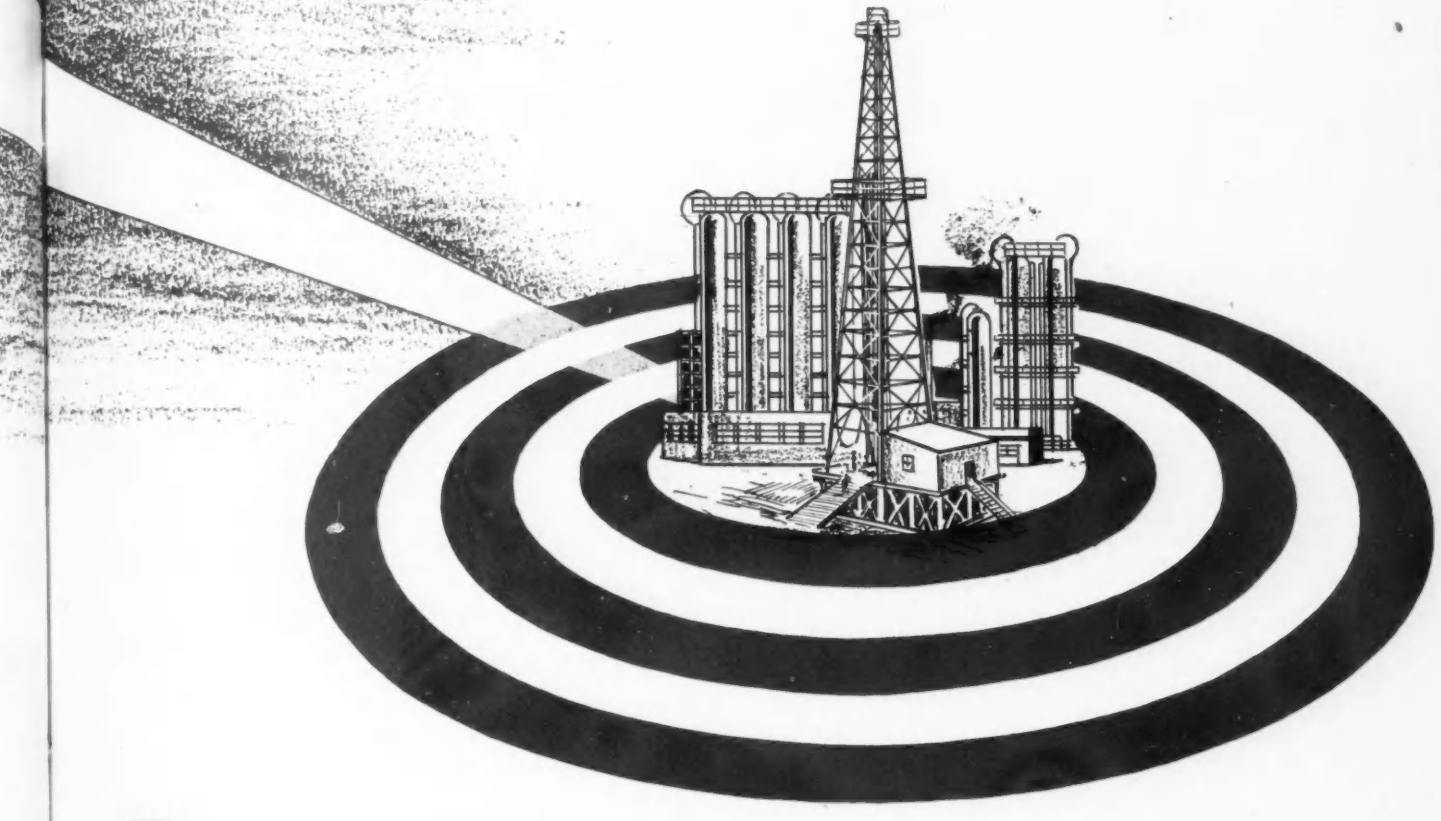
REPUBLIC SALES AND SERVICE POINTS

ARKANSAS—Camden, El Dorado, Patmos; ILLINOIS—Chicago**, McLeansboro, Salem; INDIANA—Griffin; KANSAS—Ellinwood, Russell, Wichita**; LOUISIANA—Haynesville, New Iberia, Rodessa, Shreveport*; MISSISSIPPI—Jackson, Natchez***; NEW MEXICO—Hobbs; OKLAHOMA—Oklahoma City, Seminole, Tulsa**; TEXAS—Alice, Big Spring, Borger, Corpus Christi, Dallas**, Electra, Falfurrias, Fort Worth**, Hebbronville, Houston*, Kenedy, Kermit, Kilgore, Nocona, McAllen, Monahans, Odessa*, Olney, Pampa, San Antonio**, Sundown, Talco, Victoria, Wichita Falls*.

* District offices and stores.
** Sales Office.
*** Pipe Depot.

S ARE TRAINED ON ONE TARGET

.... SUPPLY



EVERYTHING BEST IN PRODUCTS and SERVICE

OIL WELL .. PIPE LINE .. GASOLINE PLANT

AND REFINERY SUPPLIES

Republic Supply COMPANY

REPUBLIC STEEL

Reg. U. S. Pat Off.

GENERAL OFFICES · · · HOUSTON 1, TEXAS

Texas Natural Gas And Conservation

Anti-waste Measures Add To Life of State's Reserves

By JACK K. BAUMEL*
Director of Production and Chief Engineer,
Oil and Gas Division, Railroad Commission of Texas

IN SPITE of the complex and diverse problems associated with conservation of oil and gas in Texas, the Railroad Commission has been able through legislation to end some of the intolerable and profligate waste of natural gas which was formerly taking place in the state, and thus add to both the life and volume of Texas gas reserves. The more obvious forms of waste consequently have been eradicated, but efforts toward gas proration, which are designed to curtail subtle types of waste occurring within reservoirs through the premature encroachment and coning of water, have thus far met with substantial reverses in the lower courts. A recent court decision however, gives the commission all the power to prorate gas.

The information and knowledge obtained from the establishment of oil proration has not proved of much assistance in the proration of gas because of the inherent differences between oil and gas. Devices which are expedient in the proration of oil do not apply in the proration of gas and therefore, it has been necessary to start from the beginning.

The specific statutes under which the commission operates state that they were enacted for the protection of public and private interests against the evils of the production and use of natural gas under wasteful conditions by prohibiting such waste and compelling ratable production.

Statute's Definition

A gas well as defined by statute is (1) any well which produces natural gas not associated or blended with crude oil at the time of its production, or (2) any well which produces with a gas-oil ratio in excess of 100,000 cubic feet per barrel of crude oil produced.

By definition, dry gas is any natural gas produced from a stratum that does not produce crude petroleum oil. Sour gas is natural gas that contains in excess of 1½ grains of hydrogen sulphide per 100 cubic feet, or gas that contains in excess of 30 grains of total sulphur per 100 cubic feet of gas, or gas which in its natural state is found by the Railroad Commission to be unfit for domestic light and fuel purposes.

Casinghead gas is defined as gas indigenous to an oil stratum and produced incident to oil production from such stratum. Sweet gas is all natural gas that does not fall in the casinghead gas and sour gas classification.

Total gas reserves as of January 1, 1945, in Texas, including gas recoverable from oil fields, are estimated to be 64,153,782,000,000 (trillions) cubic feet. Recoverable condensate reserves as of the same date are estimated to be 1,160,092,000 barrels.

Estimated Condensate* Reserves by Texas Districts as of January 1, 1943, Thousands of Barrels

(From Petroleum Industry Committee)

DISTRICT	Estimated Ultimate Reserves	Cumulative Production 1-1-43	Estimated Reserves 1-1-43
1	161	102	59
2	38,457	6,265	32,192
3	444,510	25,110	419,400
4	146,145	22,788	123,357
5, 6	268,362	116,706	151,656
7-B, 7-C	31,470	21,525	9,945
8	155,326	25,121	130,205
9	9,463	4,398	5,065
10	420,000	140,000	280,000
Total	1,513,894	362,015	1,151,879

With the 1943 and 1944 discoveries, extensions, and revisions such as Lake Creek, Carthage, Bethany-Joaquin (Logansport area), Sheridan, San Salvador, Agua Dulce-Stratton area, South Weslaco and others, the recoverable condensate reserves for January 1, 1944, are estimated to be 1,214,331,000 barrels. The total production of condensate* for 1944 (Tables 25a and 25b) was 54,238,965 barrels. The January 1, 1945, recoverable condensate reserves are estimated to be 1,160,092,000 barrels.

The total condensate* production during 1943 was 45,547,494 barrels.

* Condensate as used here covers all types of liquefiable hydrocarbons recovered from gas wells and casinghead wells by natural gasoline plants, cycling plants, and field separators; includes condensate, natural gasoline, butane-propane, and other products.

Greatest Field

The greatest of all existing gas fields is the Panhandle Field of Texas, which has a present proven area of approximately 1,500,000 acres and a producible gas reserve of about 19,600,000,000,000 (trillions) cubic feet, or more than a fourth of the national total.

There are 825 gas reservoirs in the state. Of these, 92 contain little or no oil.

District 3, or the Gulf Coast District, has 29.94 percent of the state's reserves, and has a reserve equal to that of the Panhandle Field. The two largest fields in the Coast District, from a reserve standpoint, are the Katy, with 7.5 trillion cubic feet, and the Old Ocean Field, with 3.5 to 5 trillion cubic feet. The Sheridan Field in the same district has a reserve of 2.1 trillion cubic feet and the Pledger Field has a reserve of 1.8 trillion cubic feet. Reservoir pressures in this district are generally high, being 3300 pounds per square inch in the Old Ocean Field, with production coming from a depth of 10,000-11,000 feet.

The richest known distillate field in the state is the Lake Creek gas-condensate field in Montgomery County. Reservoir pressures in this field are high, ranging from 3927 pounds per square inch with a temperature of 246 °F. at 9050 feet below sea level to 5300 pounds per square inch at 11,625 feet below sea level. This field has ten producing zones and yields from 120 to 250 barrels of hydrocarbon liquids per million cubic feet of gas. The original gas reserves in place are estimated at 450 billion cubic feet, and the hydrocarbon liquid in the wet gas originally in the reservoir is estimated at 58 million barrels. The total cumulative production of condensate from the field from 1941 to

* Presented at the Meeting of Interstate Compact Commission, in Oklahoma City, June 14-16.

Ultimate Distribution of Gas Produced in Texas Since 1939

(Millions of Cubic Feet)

YEAR	Total Gas Produced	To Pipe Line for Light and Fuel	Percent	Extraction Loss at Gasoline Plant	Percent	Plant Fuel Lease Operations	Percent	Recycling and Repressuring	Percent	Vented to Air	Percent	To Carbon Black	Percent	Gas Lift	Percent
1939	1,298,307	462,072	35.58	50,891	3.93	170,853	13.17	105,438	8.12	142,403	10.97	316,804	24.39	49,846	3.84
1940	1,544,089	494,826	32.05	56,210	3.64	216,583	14.02	265,677	17.20	132,740	8.60	326,050	21.12	52,003	3.37
1941	1,817,150	559,279	30.78	71,667	3.94	213,391	11.74	481,607	26.50	101,147	5.57	329,361	18.13	60,698	3.34
1942	1,916,825	683,473	35.65	68,692	3.58	193,204	10.08	531,164	27.71	81,988	4.28	295,612	15.42	62,692	3.28
1944	2,434,718	1,011,200	41.53	80,628	3.31	238,137	9.78	585,388	24.04	111,314	4.57	305,421	12.55	102,630	4.22

offering the advantages of . . .

MATCHED EFFICIENCY

. . . Here's Why

"MATCHED EFFICIENCY" means that the quality and working potential of this drill pipe-tool joint combination has been completely controlled from engineering research and design through every step of manufacture.

This close "Matched Efficiency" control is possible only because both the drill pipe and tool joint are made by *one manufacturer.*

To the user this offers—the convenience of one order to place — one company responsibility — plus a drill pipe-tool joint combination, whose "Matched Efficiency" is best revealed by its outstanding performance record in the field.

SPANG-CHALFANT

Division of The National Supply Company • Executive Offices: Pittsburgh, Pa.

March 1, 1945, is 2,453,502 barrels, and the total cumulative gas production as of March 1, 1945 is 15,767,180,000 cubic feet. During 1944 the field produced 9,626,022,000 (billions) cubic feet. All of the gas is recycled and returned to the "A," "B," and "D" sands to maintain the pressure.

One of the largest reserves in District 5 and 6 is the new Carthage field in Panola County. It is estimated that the field will cover over 300,000 productive acres, with a gas volume in place of over 4 trillion cubic feet. The ultimate recovery is estimated to be about 3 trillion cubic feet. Up to this time no cycling plants have been erected in this field. The production is coming from four zones, the Hill (4900-5050 feet), Upper Pettit (5650-6000 feet), Lower Pettit (5850-6200 feet), and Travis Peak (6000-6400 feet). The estimated ultimate liquid recovery is about 40 million barrels.

Third for Operations

Although 41.53 percent of the total gas produced and reported to the Commission for 1944 went to pipe lines for light and fuel, 38.04 percent of the gas was used in field operations, of which 24.04 percent went to repressuring and recycling, 4.22 percent went to gas lift, and 9.78 percent was used for fuel and lease operations.

The carbon black industry in Texas utilized 12.55 percent of 1944 production. The 38 plants used 305,421,000,000 cubic feet of gas, and produced 483,278,386 pounds of carbon black. The average yield of carbon black in 1944 was 1.58 pounds per thousand cubic feet. In 1943, the average yield of carbon black was 1.48 pounds per thousand cubic feet of gas. The carbon black and gasoline industry of Texas dominates that of the entire United States.

In years past such hydrocarbons as propane and butane, which occur in wet or casinghead gas, were wasted in large quantities to the air. Now, however, these valuable hydrocarbons are used as liquefied petroleum gases and as a material for aviation fuels. During 1944, 8,743,841 barrels of propane and butane were produced in the gasoline and recycling plants of Texas.

Natural gas furnishes large quantities of derivatives used in the production of synthetic rubber. There are now seven plants in Texas making butadiene from petroleum. The Celanese Corporation of America is now building a butadiene plant at Bishop, Texas. This plant will employ petroleum gases as the basic raw material, using the Aldol process. The rated annual capacity of the seven Texas plants is 247,500 tons of butadiene from petroleum and natural gas.

Wasteful Practices

The legislature of Texas has considered the following to be wasteful practice in production, transportation or use of natural gas:

1. The operation of an oil well with an inefficient gas-oil ratio.
2. The drowning with water of any stratum capable of producing gas in paying quantities.
3. Permitting natural gas to burn wastefully.
4. The creation of unnecessary fire hazards.
5. Loss incident to or resulting from so drilling, equipping, or operating wells in such manner as to reduce the ultimate recovery of natural gas from a reservoir.
6. The venting to the air from a well producing both oil and gas of any quantity of gas in excess of that amount necessary in the efficient operation of the well.
7. Production in excess of transportation or marketing facilities.
8. The use of natural gas for carbon black manufacture without first extracting the natural gasoline content.
9. The use of sweet gas produced from a gas well for carbon black manufacture.
10. Permitting any natural gas produced from a gas well to escape to the air.
11. The production of natural gas from a well producing oil from a stratum other than that in which the oil is found unless such gas is produced in a separate string of pipe from that in which the oil is produced.

Trends in Production and Use of Natural Gas in Texas

(in million cubic feet)

PRODUCTION

YEAR	Total Production	Increase Percent	Sweet Gas	Change Percent	Sour Gas	Change Percent	Casinghead Gas	Change Percent
1939	1,298,307	.....	620,368	.....	251,900	.....	422,773	.....
1940	1,544,089	18.93	825,881	33.13	261,208	3.70	452,238	6.97
1941	1,817,150	17.68	1,126,272	36.37	256,558	—1.81	427,462	—5.48
1942	1,916,825	5.49	1,270,854	12.84	237,940	—7.8	402,328	—5.88
1944	2,434,718	27.02	1,669,328	31.35	238,381	0.19	527,014	30.99

USE

YEAR	Recycling and Repressuring	Change Percent	Natural Gasoline	Change Percent	Carbon Black	Change Percent	To Pipe Line	Change Percent
1939	98,000	.....	870,017	.....	316,804	.....	462,072	.....
1940	319,000	326.00	923,507	6.14	326,050	2.91	494,826	7.32
1941	570,000	79.00	945,267	2.35	329,361	1.01	559,279	13.02
1942	580,000	1.75	904,403	—4.32	295,612	—10.25	683,473	22.20
1944	666,207	14.86	1,134,183	25.40	305,421	3.31	1,011,200	47.95

Purposes by Law

In addition to the definitions of the different kinds of gas as heretofore mentioned and what constitutes waste in the production and handling thereof, Texas law has something to say concerning for what purposes these different kinds of gas shall be used. Texas law provides in part that after the expiration of ten days from the time of encountering gas in a gas well no gas from that well shall be permitted to escape to the air and no gas produced therefrom shall be utilized except for these purposes.

Sweet Gas: Light or fuel; efficient chemical manufacturing other than the manufacture of carbon black; the introduction to an oil or gas-bearing horizon to maintain or increase the reservoir pressure and increase the ultimate recovery therefrom; the use for the extraction of natural gasoline from the gas when the resulting residue is returned to the formation from which it came.

Sour Gas: Efficient chemical manufacturing processes including the manufacturing of carbon black, provided, when used for carbon black manufacture, that the plant recovery must be as much as one pound of carbon black per 1000 feet of gas and provided the gas is stripped for its gasoline content prior to burning it for such purpose.

Casinghead Gas: May be used for any beneficial purpose. Sweet, sour, and casinghead gas are permitted for gas lift where the gas so used does not exceed 10,000 cubic feet per barrel of oil produced. Provision is also made for the semiannual determination of open-flow and rock pressures of each well. These determinations to be made under uniform and generally recognized methods and regulations prescribed by the Commission. Texas statutes have this in general to say with respect to permitted rates of production from gas wells: Nothing contained in the statutes shall require that the production from any gas well having a daily natural open-flow of 200,000 cubic feet or more be less than 50,000 cubic feet daily, and further that nothing in the statute shall require that the production from any gas well having a daily natural open-flow of less than 200,000 cubic feet be reduced to a quantity less than 25 percent of the open-flow volume. In all common reservoirs producing both sweet and sour gas, no gas well shall be permitted to produce in excess of 25 percent of its daily capacity; provided the Commission, upon a finding that reservoir conditions require that such percentage be increased to prevent waste and that such increase will not create a drainage condition as between sweet and sour gas areas, may authorize an increase in such allowable production.

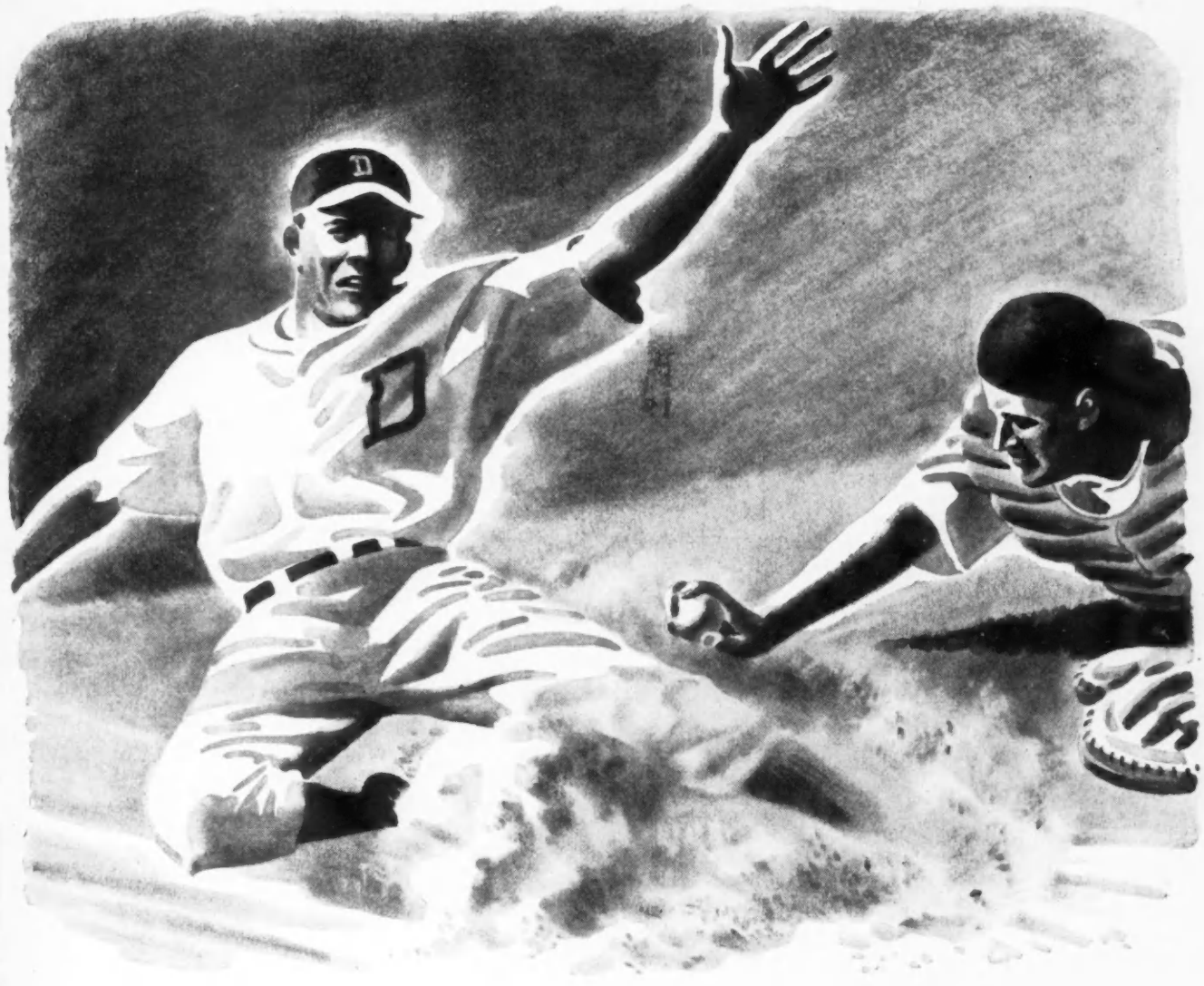
Operating under the statutes previously referred to, the Commission has done these things with respect to regulating the production of gas in Texas:

It has promulgated a general rule of state-wide application which rule applies in the absence of a specific rule. This general rule limits the daily take from gas wells to a quantity not to exceed 25 percent of its open-flow potential capacity.

With respect to the production of casinghead gas it has also promulgated a state-wide rule which applies in the absence of a specific field rule, which state-wide rule sets up a permissible gas-oil ratio of 2000 cubic feet per barrel. If the production of such quantity of gas per barrel of oil is deemed to result in an inefficient use of gas, then after notice and hearing it may prescribe a permissible gas-oil ratio which testimony shows will result in the eficient utilization of gas to produce the oil. In some fields this permitted ratio is as low as 500 cubic feet per barrel, whereas in other fields it may exceed 2000 cubic feet per barrel.

Transfer of Allowables

Another way that the Commission has sought to obtain the greatest utilization of the gas contained in a reservoir that is productive of both gas and oil is to allow the closing in of the wells that produce with ratios in excess of that prescribed by the Commission and to permit the transferring to and producing



...safe by ~~inches~~ OUNCES

Practice makes perfect! To master the split-second technique of successful base-stealing, many a baseball player *practices* with a few ounces of LEAD in his shoes—deliberately handicapping himself during the training season so he will have a "plus" in speed for the pinches.

It is that same PRICELESS "PLUS" that pays off in a product . . . a process . . . a "know how." It is that PRICELESS "PLUS" that has made Hewitt industrial rubber products outstanding for 85 years . . . that led to Hewitt's pioneering leadership in the synthetic rubber field 14 years ago . . . that makes buyers realize that when it comes to JOB-ENGINEERED Industrial Rubber Products, "Hewitt Can Do It!"

★ ★ ★

Specify "Hewitt" for quality industrial rubber products. Phone the Hewitt distributor listed in the Classified Section of your telephone directory . . . or write Hewitt Rubber Corporation, 240 Kensington Avenue, Buffalo 5, New York.

HEWITT RUBBER *of Buffalo*

Job-Engineered Industrial Hose • Belts • Molded Goods

QUALITY RUBBER PRODUCTS FOR INDUSTRY FOR 85 YEARS

by other wells of the allowable of such closed-in wells, provided that the transferred oil must be produced from wells that operate with gas-oil ratios lower than the operating ratio of the wells from which the oil is transferred.

The Commission has always advocated and encouraged the picking up of casinghead gas from oil wells and the returning of it to the producing formation where such is necessary for reservoir pressure maintenance and where such practice can be shown to result in a greater ultimate recovery of oil and gas from the reservoir. Many applications of such nature have been made and seldom does a week pass but that a hearing on some such application is held.

With respect to reservoirs that are productive of gas only, it might be well to point out that the most of these reservoirs in Texas, so far as potential capacity is concerned, lie along the Gulf Coast area and in what we refer to as the Panhandle District of Texas. For several years the Commission has been prorating natural gas in the Panhandle. Gas proration schedules are prepared monthly for the purpose of allocating among the various wells their proportionate part of the gas outlet assigned the field. Other gas fields on which proration schedules are issued are the Rodessa Field, the Carthage Field, and several reservoirs in the Agua Dulce Field. Allowables in these fields are distributed on the basis of 2/3 to rock-pressure times acreage plus 1/3 to potential.

Another conservation measure which the Commission has been putting into effect in an effort to make the most efficient use of gas in a reservoir that contains both gas and oil is to place a volumetric displacement on the gas wells. Such a rule is designed to permit any gas well to void as much space in the reservoir daily as does an oil well producing from the same reservoir. It does not deny the rights of the operator that is situated in the gas cap area, but simply restricts his production of gas to a reasonable amount primarily for the purpose of preventing an undue rise in the gas-oil contact and the migration of oil from the oil column into the dry gas sand.

Recent Orders

Attention is called specifically to some of the more recent orders of the Commission that have been promulgated to apply to strictly gas reservoirs. The first of such orders promulgated by the Commission to the knowledge of the author applies to the Lake Creek Field in Montgomery County. In this field there are ten separate known gas sands in the interval from approximately 8900 feet to 11,600 feet. At hearings held before the Commission evidence was adduced to show that the gas contained in these gas reservoirs is extremely rich and that at least three of these reservoirs are of such extent and nature that it is feasible and practical to carry on a pressure maintenance program at the same time that gas is being produced. It was shown that ordinary separator usage resulted in the recovery of some 160 barrels of condensates per million cubic feet of gas produced, whereas by processing this gas in an absorption plant there could be recovered an additional plus 100 barrels of condensate per million feet. It was further shown that the dew point in the reservoir was at or near virgin reservoir pressure and that any reduction of this reservoir presure resulted in the heavier constituents of the gas coming out of the gaseous phase in the reservoir and assuming a liquid phase therein, and that under such conditions it is improbable that the maximum recovery from the reservoir can be obtained unless the reservoir pressures are maintained at such a point that these hydrocarbons will be kept in the gaseous phase in the reservoir.

It developed with respect to the reservoirs in this particular field that there was slight evidence of an effective water-drive and that, therefore, if reservoir pressures were to be maintained that the most practical means of maintaining them would be to return the gas to the reservoir as soon as it has been processed for its hydrocarbon content.

Estimated Gas Reserves by Texas Districts, 1944 Gas Production and Gas Wells in the State of Texas

(All Volumes in Millions of Cubic Feet)

Railroad Commission District	Number Producing Gas Wells	Estimated Reserves as of 1-1-44	Gas Produced During 1944 as Reported to Commission*	Estimated Available Reserves 1-1-45	Percent
1	90	85,000	4,759	80,241	0.13
2	216	3,500,000	133,127	2,366,873	5.23
3	312	19,750,000	539,698	19,210,302	29.94
4	571	9,500,000	389,935	9,110,065	14.20
5, 6	456	7,150,000	358,758	6,791,242	10.59
7B, 7C	364	256,500	46,686	209,814	0.33
8	103	2,750,000	107,945	2,642,055	4.12
9	101	97,000	34,726	62,274	0.10
10	1649	23,500,000	819,084	22,680,916	35.36
Totals	3962	66,588,500	2,434,718	64,153,782	100.00

* These production figures do not include 375,678,430,000 (billion) cubic feet of casinghead gas unreported to the Railroad Commission of Texas from the various districts. The above figure was obtained by estimating the total casinghead gas produced by the 101,859 oil wells during 1944. The total oil produced during 1944 was 741,126,397 barrels; the average gas-oil ratio for the State for 1944 was 1,218 cubic feet per barrel of oil produced. The total casinghead gas produced with the above oil was 902,691,951,546 (billion) cubic feet. Of that amount 527,013,522,000 (billion) cubic feet was reported and accounted for to the Commission. The difference then was 375,678,430,000 (billion) cubic feet unreported

Conservation Landmarks

Orders similar to those have been promulgated with respect to various gas reservoirs in the Agua Dulce Field.

In the opinion of the author these orders make provision for the highest degree of conservation that can be practiced in any gas reservoir. They are landmarks in the field of gas conservation in Texas.

With respect to orders of the Commission concerning fixing of efficient gas-oil ratio limits within which oil wells may be produced, it would be well to point out that as early as 1937-38 the Commission instituted periodic gas-oil ratio surveys in the various fields where gas was a problem. In the application of these rules a gas well that produces with a ratio in excess of that prescribed by the Commission has its oil allowable reduced; the effect being that the high ratio well is allowed to produce as much gas from the reservoir in the production of its oil allowable as does a like well producing with a ratio within the limits prescribed by the Commission. In many fields surveys were formerly quarterly or semiannually; since the war emergency most of the periodic surveys are on an annual basis. The effect of such a rule is two-fold in nature: First, it makes the operator conscious of gas when he is completing his well and makes toward a better well completion. Second, it has the effect of promoting work-over operations where wells were originally so completed that the casing was set high and resulted in a penalty to the oil allowable.

Injection Encouraged

Another type order which the Commission has entered with the purpose of encouraging the return of gas to the producing formation in oil and gas producing reservoirs provides that credit against the producing gas-oil ratio may be given for gas that is currently injected to the same formation from which it is produced. The application of such an order encourages injecting gas to the producing formation, since if there results therefrom a producing ratio in excess of that prescribed by the Commission the operator may secure credit against this gas withdrawn for the gas that he has injected. This type of order does not penalize the operator in his oil allowable if he injects a suficient amount of gas to offset that which he has produced.

Under sound engineering and gas conservation practices prescribed and enforced by the Railroad Commission of Texas, the venting of gas to the air has been reduced from 384 billion cubic feet, or 37.43 percent of the gas produced in the state in 1935, to 111 billion cubic feet, or 4.57 percent of the gas produced during 1944. Most of the gas that is being wasted or vented to the air is casinghead gas which comes from oil wells, and has always been a problem in preventing gas waste.

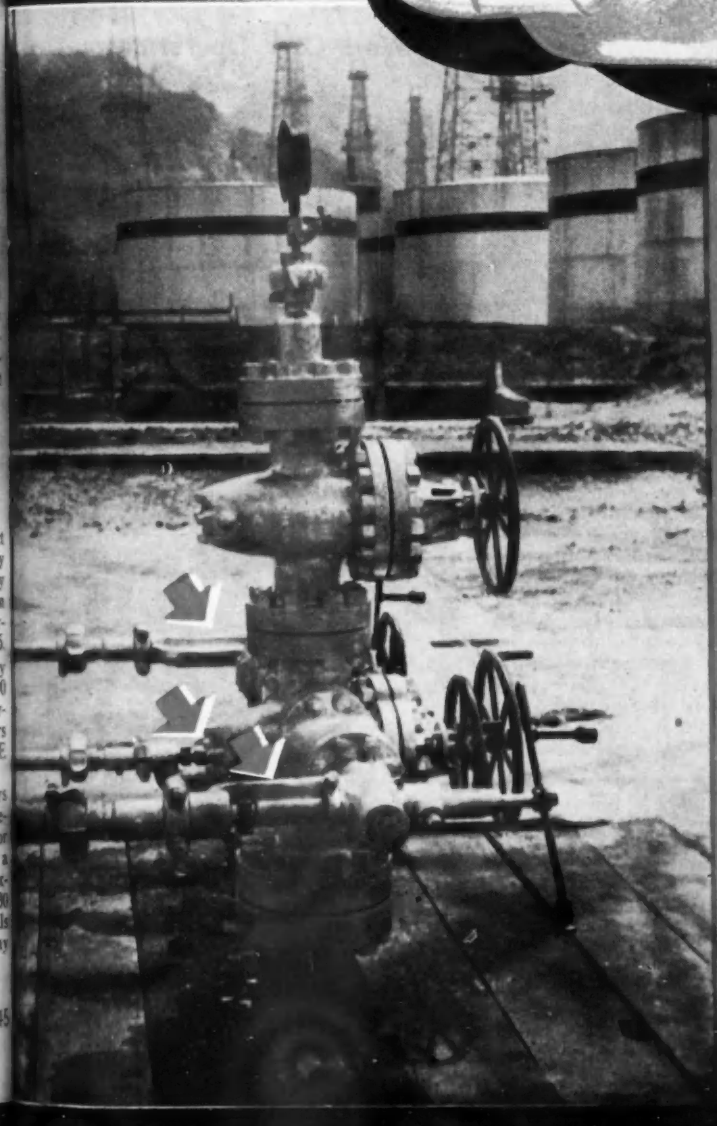
The supplies of petroleum and natural gas are not unlimited. Production should be controlled and casinghead gas now wasted utilized as a source of raw material for the new "Petrochemical" industry, for repressuring, and for gas-lift work wherever possible.

Natural Gas Utilities Operation Changes Few

End of the European war will affect operations of natural gas utilities only to a limited degree, it is indicated by FPC reports. Only minor reductions in revenues likely will be experienced during the balance of 1945 and early 1946.

Analysis of information furnished by companies representing more than 90 percent of the industry shows that revenue from sales to ultimate consumers during the twelve months following V-E day will approximate $619,398,000.

In that same period, planned outlays for additions to structures and improvements are placed at $33,286,000 and for additions to equipment at $86,562,000, a total of $119,848,000. Maintenance expenditures are estimated at $36,623,000 and increased inventories of materials and supplies at $4,427,000, a total outlay of $160,989,000.



. . . the Cameron "Flow-Wing" Beans with Hardened Inserts to Resist Cutting

Operators in several California fields where an extremely abrasive flow condition would cut out the most efficient chokes in a period ranging from half an hour to four or five days, found the solution to their problem in the Cameron Type "D" Flow Wing.

The design of this unique Christmas tree accessory, which combines all necessary wing fittings in a single compact unit, fortunately permits interchanging a special choke housing with the regular flow bean. This special housing, equipped with a Stoodite insert and tungsten-carbide orifice, performed satisfactorily on these "problem wells" for periods ranging up to six months.

Pictured at left is a Cameron 10,000 lb. test Safety Xmas Tree installed on a well in the "D-7" zone of the Ventura, California, field where extreme sanding and abrading conditions are encountered. The tree is equipped with three Cameron Type "D" Flow-Wings, each of which is provided with the special abrasion-resistant flow beans.

Operators in areas where abnormal pressures and/or extreme abrasion conditions pose similar flow bean problems are invited to write for complete details on both the Cameron Type "D" Flow-Wing and the special interchangeable abrasion-resistant flow beans.

CAMERON IRON WORKS, INC.

711 MILBY ST., HOUSTON, TEXAS

Export: 74 Trinity Place, New York, N. Y. *California:* Howard Supply Co., Los Angeles. *Rocky Mountain:* Mountain Sales & Service, Casper, Wyo. *Oklahoma:* 310 Thompson Building, Tulsa.

Salvaged Pump Barrels Form Attractive and Effective Truck Front-End Guard

On a Kansas lease which uses chromium-plated insert pumps, a new truck was obtained which, due to wartime restrictions, had a plain and rather unsatisfactory radiator grille. Checking over the lease scrap pile for material which might be used to strengthen the grille, the superintendent noted a number of worn out plungers shining among the other rusty bits of discarded equipment.

TRUCK BUMPER

Putting the problem up to the company welder, a practical guard for the radiator was devised, heavy enough to override brush and even to serve as pusher for other equipment. The various plungers were worked up to give both horizontal and sloping members which, when welded together, formed a unit which retained its chromium plate and which made that lease truck recognizable over all others in the area. Requiring no polishing or painting, the novel grille remains as bright and attractive as when first installed.

The pump plungers are of heavy enough cross section to withstand fairly severe impact, and do not bend as easily as would a softer material. The unit may serve as pusher for disabled vehicles without damage.

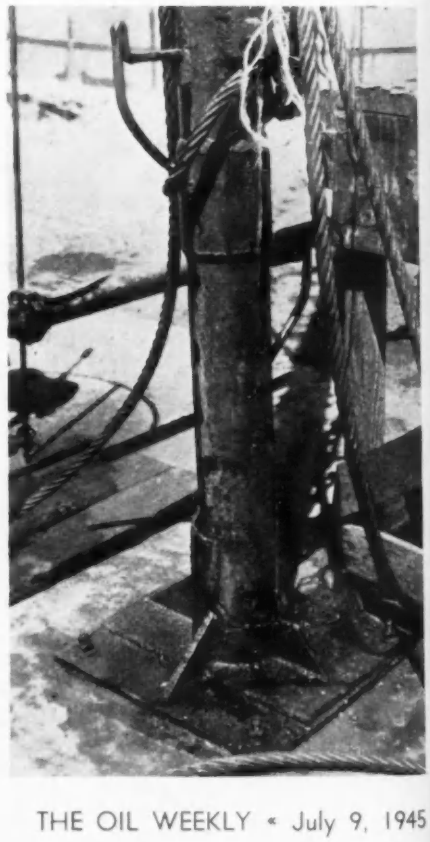
Socketed Service Mast Base Speeds Work-Over Operations

To provide a dependable, easily moved base for his pulling mast, one operator devised a shop-made footing that is as simple and positive-acting as it was inexpensive to build. A standardized base was planned and laid out in the concrete flooring beside the casing head of those wells not previously equipped with derricks, and a steel base plate was designed so as to fit over studs buried in the flooring.

MAST SETTING

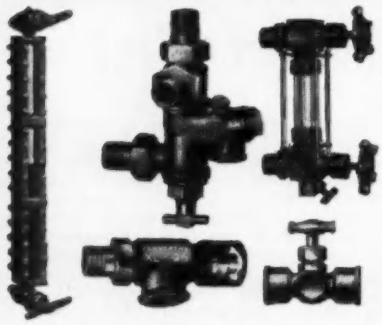
Atop the reinforced square plate was welded an upright section of specially cut out casing which serves as a shoe or socket into which the base of the mast is mounted, as shown in the illustration. Heavy triangular fillets radiating from three sides of the shoe add ample support to the fitting. Once the base of the mast is set in this socket-type footing and the several guy lines tightened, there is no danger of the mast skidding to one side under impact of a heavy or sudden load on the drawworks.

This type of base may be constructed of scrap materials and is easily adaptable to nearly any conditions of mast size, degree of portability and well conditions. An individual base may be left at each rig, or it can be made portable merely by taking extra precautions to see that no injury mars the studs buried in the concrete flooring.



$5.00 is paid for each illustrated acceptable contribution. Mail to The Editor, THE OIL WEEKLY, P. O. Box 2608, Houston 1, Texas

PENBERTHY
QUALITY PRODUCTS



Penberthy liquid level gages of various types—injectors—ejectors—all so widely used throughout the oil industry because they have always been dependable under the most severe service conditions.

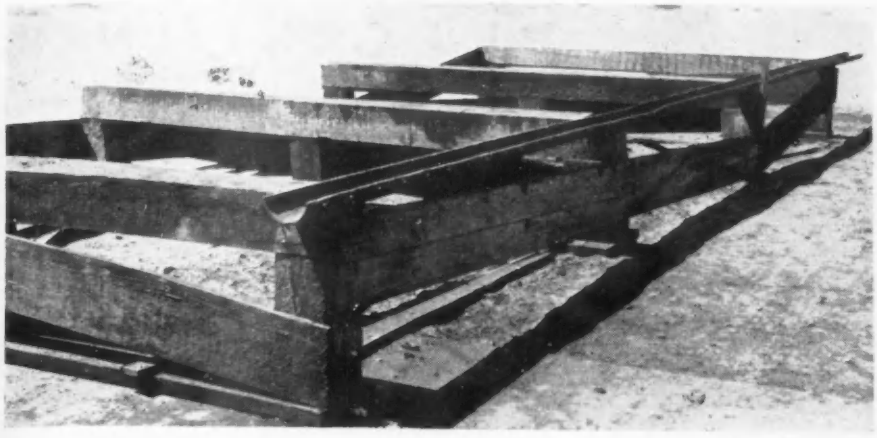
All are of rugged construction and made by an organization with 57 years experience in the manufacture of quality products.

See Pages 2450 to 2455, Composite Catalog.

PENBERTHY INJECTOR CO.
DETROIT, MICH. Canadian Plant WINDSOR, ONTARIO

PRODUCTION HINTS

Slotted Pipe Forms Run-In Trough for Tubing or Rods



WELL SERVICING

A worthwhile improvement which can be made on any pipe rack consists of a length of split casing laid openside up along the pick-up side of the rack. Tubing or rods may be rolled over on to this trough or guide, then picked up by the drawworks with the knowledge that the joint will follow perfectly and not catch on collars of other joints or roll down the side of the stack as frequently happens when they are pulled up directly from the pile.

While a number of companies are utilizing this scheme, an improvement was made by one operator which tends further to improve this phase of the running-in operations. Instead of plain casing, a length of old perforated pipe was used. Shop perforated pipe was used since the inside surface is smooth. Use of this type of casing permits some draining of "wet" joints while they are resting in the trough, and also allows drainage of oil or sludge that may have accumulated in the guide following a wet pulling job, thus assuring a clean guide for the next time the well is pulled. Notching the ends of the rack cross members permits laying the trough with its top edge flush with the normal surface of the rack.

Locking Bar Provides Latch for Field Pump House Doors

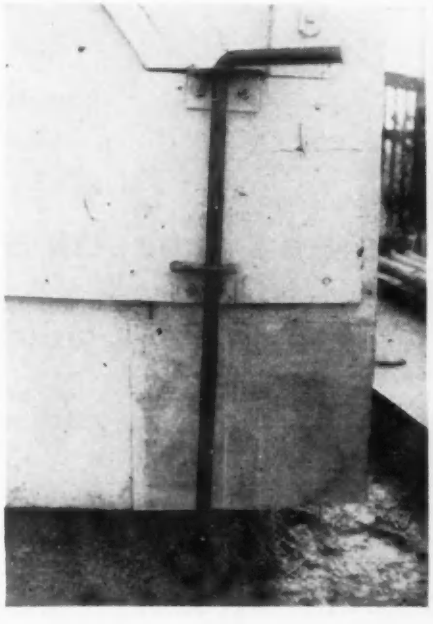
BUILDING ACCESSORY

Where wind or severe weather conditions must be taken into account, damage to pump house doors quickly results if they are allowed to bang or slam in the wind. One Kansas operator took steps to eliminate this source of wear-and-tear on his pump houses by going into mass production on the gadget shown in the photograph.

Scrap pieces of angle iron were cut into 3-inch lengths, and drilled for ⅜-inch bolts on one side and for a ¾-inch rod on the other. Three-quarter inch sucker rod from the salvage pile was cut into 4-foot lengths and a 6-inch lift formed on one end at right angles to the rod. One-foot long nipples, of ¾-inch pipe, were also made up in sufficient number to provide one for each pump house. Strap iron was cut into 6-inch pieces and holes drilled in one end.

All this may be prepared in warehouse or shop, and save otherwise lost time.

The maintenance crew, with a stock of ⅜-inch bolts, then installed the retainer as shown, with the pipe nipple set into the ground to afford holding space for the retainer, and the unit located so as to insure a sliding fit between rod and socket. When it is desired to close a door, the bar is raised and laid in the niche formed by the strap iron, so as to keep it from tending to drag on the ground.



Clean Out with a MILLER Sand Pump

Refer to Composite Catalog page 1907 for description and prices.

Miller Sand Pump Co.
P. O. BOX 4516
OKLAHOMA CITY 9, OKLA.

FOR A GOOD, HONEST WATER CONDITIONING JOB... LARGE OR SMALL

Call JOHN FIELD-MAN ON YOUR NEXT WATER CONDITIONING JOB

LELAND HAMNER CO.
P. O. Box 1065 - Capitol 9758 - Long Distance LD 2175
2211 PRESTON AVE. HOUSTON, TEXAS

Why Use Tubing?
you can
PUMP MORE OIL
with
LAMTEX
Casing Pumps
For the whole story, illustrated, phone or write:
LAMTEX EQUIPMENT CORP.
2501 Virginia St. Fort Worth, Texas
Phone 2-6860

See LAMTEX, Composite Catalog, pages 1570-1571

J&L PERMASET PRECISIONBILT PRE-FORMED WIRE ROPE

PRECISION AND PRE-FORMING

MEAN PERFORMANCE FOR YOU

Like a sextant, J&L wire rope is a fine machine. It is made with *precision* and pre-formed for greater efficiency and longer resistance to wear and fatigue. Made from J&L Controlled Quality Steel . . . by men of skill and experience . . . J&L Permaset Precisionbilt Pre-Formed Wire Rope affords greater safety . . . helps keep operations at peak . . . protects your investment in equipment.

J&L STEEL

JONES & LAUGHLIN STEEL CORPORATION

GILMORE WIRE ROPE DIVISION

PITTSBURGH 30, AND MUNCY, PENNSYLVANIA

J&L PERMASET PRECISIONBILT PRE-FORMED WIRE ROPE

The Outlook

FPC's all-out investigation of natural gas opens at Kansas City September 18. The commission's schedule of subjects carefully avoids mention of oil, but it has not disclosed how it can study our gas resources without getting into the field of petroleum. See page 51.

* * * *

Synthetic rubber still will have an opportunity to show whether it can compete, in quality, adaptability and price, with natural crude, for several years will elapse before the need for the factory-made product is eliminated and synthetic will have to stand or fall on its record—and government policy, as yet undetermined. See page 54. Natural crude stockpile is so low every possible guayule bush will be harvested this year, new plants will be built for quick processing.

* * * *

Determination of the Senate to forego a vacation until the San Francisco agreement is ratified, probably in August, may mean that the O'Mahoney committee hearings, originally suspended until after Labor Day, may meet again soon.

* * * *

WPB's revocation of restrictions on manufacture of home oil burners is disturbing PAW, faced with supplying enough oil next winter to meet present rations. Outcome: OPA will issue regulations permitting new installations only where purchaser has assurance of rations from his local board.

* * * *

The ordered 50 percent cutback in artillery shell production may have its benefits in oil-country tubular goods, and may help WPB's program of lifting restrictions on use of metal for civilian products.

* * * *

Reciprocity between states in motor truck regulations and imposts is expected to follow the Jackson, Mississippi, conference and should eliminate many interstate highway barriers which for years have plagued the oil and other industries.

* * * *

No reduction in the oil subsidy payment for stripper well production is contemplated by OPA or Judge F. N. Vinson, economic stabilizer, during the war emergency.

* * * *

Higher prices for West Texas crude may result from the war. OPA willing. This crude at $1. has become much more attractive than East Texas crude at $1.25 or Southwest Texas crude at $1.45. Marketwise brokers think this price brought about recent increases in demand for West Texas crude.

* * * *

Three federal agencies have ruled as many different ways on legal rights of returning war veterans seeking job reinstatement. Congressional action may be necessary to obtain the right interpretation.

* * * *

Better advice should follow appointment by the State Department of competent men as petroleum attaches to assist ambassadors to some 14 countries in handling oil problems. Recognition of the problem was long overdue.

* * * *

"If refinery shutdowns continue, we may well be compelled to make up in blood what we lose in petroleum," Rear Admiral A. F. Carter, executive officer of Army-Navy Petroleum Board says, in pointing out that recent work stoppages have cost 3-million barrels of products.

* * * *

Government surplus-disposal agencies will not let goods accumulate in warehouses to overhang markets for years to come, but will strive aggressively to get them out of the way as quickly as possible. There will be no haggling over values and, where properly circularized, the highest bid received will be regarded as the market value.

SIMPLICITY IS THE FIRST REQUISITE OF SAFETY

Apply this yardstick to any system of well control!

Before you purchase any so-called "system of well control," apply this four-step yardstick for your own protection, to assure that you will be able to operate continuously throughout the entire sequence of operation with control.

1. The maintaining at all times of a balanced relationship in nominal size, strength, and pressure subject areas, between the equipment used and the pipe with which it is used during all stages of the procedure.
2. A degree of economy which permits balancing cost with ability to purchase and use. Provision of adequate control to permit safe assembling and disassembling of control equipment between operations permits removal to the position of accessories, for use on other wells, many expensive pieces of equipment that will otherwise remain in the permanent structure of each individual well. The resulting economies make possible the use of fewer parts of a higher quality at a greatly reduced overall cost.
3. The removal of control equipment after it has performed its control function automatically results in the removal of mechanisms which must depend upon highly flowable, short-lived, low-strength packing materials, necessary for the performance of individual operations at the time of completion, but not suitable over the long flowing life of the well.
4. The resultant simplification in all premises of the problem includes fewer parts, less space occupied, reduction of lever arms, reducing height of structure, fewer parts to give trouble and needing repair.

Gray systems of Well Control are coordinated methods, providing the highest degree of control and operating efficiency for performing the entire sequence of operations from drilling through producing the well. There is no gap in control when you use Gray Systems of Well Control.

The whole is greater than any of its parts.

Apply this yardstick to any system of well control!

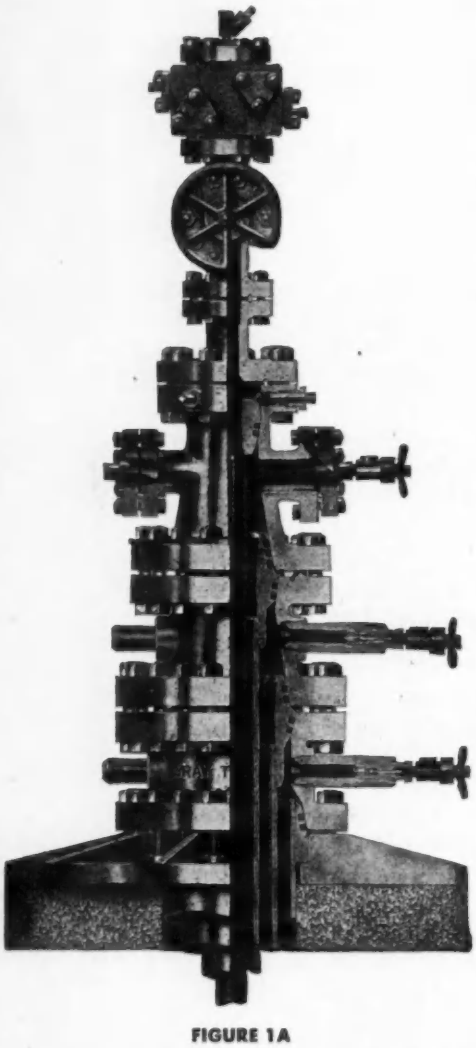


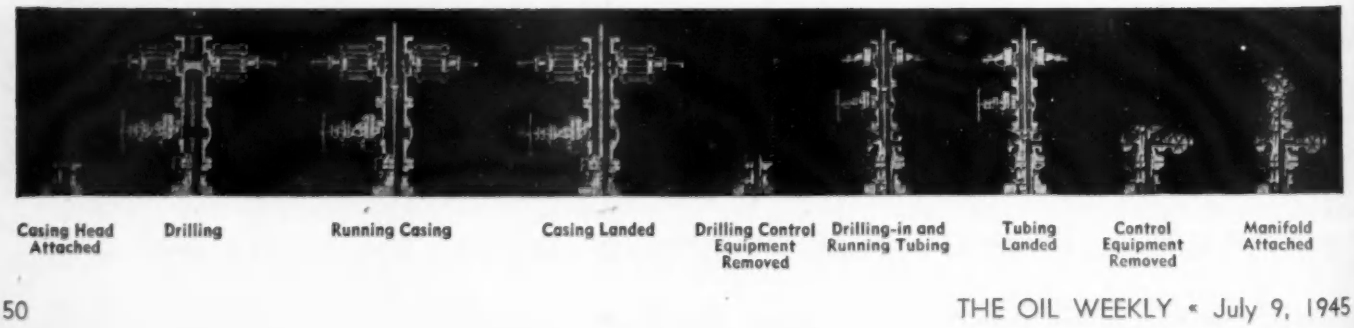
FIGURE 1A

Complete Well Head Assembly equipped with Composite Manifold, Valve Removal, Installation and Removal.

THE WHOLE IS GREATER THAN ANY OF ITS PARTS

GRAY
TOOL COMPANY
HOUSTON

West Coast Distributor: WAGNER-MOREHOUSE, INC., Los Angeles. *Export Representative:* GUY E. DANIELS, 30 Rockefeller Plaza, New York City



Casing Head Attached | Drilling | Running Casing | Casing Landed | Drilling Control Equipment Removed | Drilling-in and Running Tubing | Tubing Landed | Control Equipment Removed | Manifold Attached

The Week's News

OIL-INDUSTRY interest again focussed on the Federal Power Commission last week when it was announced that first hearings in its natural gas investigation would open in Kansas City in September. The carefully-worded agenda of the investigation made no mention of petroleum, but did nothing to allay industry fears that the FPC might seek to regulate oil indirectly by regulating the gas produced with it. Story below.

Future for Synthetic Rubber—Synthetic rubber still has a chance to show whether it can compete with the natural product. Government rubber men foresee a production of close to 1,200,000 tons next year and continued demand for synthetic until the Far East plantations are freed and rehabilitated. By that time, they expect that synthetic production costs will be down close to the crude market price. Page 54.

Texas Refinery Seized—The government took over another (The Texas Company Port Arthur, Texas, refinery) oil company's properties to forestall a possible shut-down because of labor troubles, with the President indicating that no chances would be taken of controversies between labor and management cutting into the flow of badly-needed products. Page 53.

Military Taking Tarakan Oil—United States vessels are fueling at Tarakan Island, off the coast of Borneo, under reverse lend-lease agreements with the Netherlands government. Usable without refining, the Tarakan oil is not great in volume, but whatever is available saves critical tanker space. Page 55.

Oil Loans to Elliott?—Brigadier General Elliott Roosevelt, whose borrowing activities are currently the subject of much interest in Washington, including apparently the income-tax collectors, seems to have gone to the oil industry as well as the grocery for supplies. Treasury men are investigating two loans of $300,000 and $200,000, respectively, from Texas oil interests. The financial maneuvers of the son of the late President came to light last month with the disclosure that he had borrowed $200,000 from John Hartford, head of Atlantic and Pacific Tea Company, Jesse Jones settling the debt for $4000. Page 54.

Tanker Situation Eases—Emergency wooden barges will be discontinued in Gulf intracoastal oil hauls and daily reports from tank car operators are no longer required, both due to easing of the tanker situation.

Public Land Leasing Changes—O'Mahoney and Hatch have introduced legislation in Congress providing for changes in leasing regulations as applied to public lands, this following long discussion of the need for revisions. Page 52.

Latin-American Oil Imports—PAW announced oil import volume for the first time since the German submarine menace appeared, it being revealed that Latin America sent more than 9½ million barrels of oil to the East Coast during six weeks ended June 23. Page 52.

Wholesale Gas Schedules—New schedules for natural gas sold at wholesale have been filed with the FPC by Canadian River Gas Company and Colorado Interstate Gas Company in compliance with orders issued in 1942 and sustained by the Supreme Court April 2, requiring reductions in rates of not less than $2,616,000 a year.

Proper Price for Oil—All of the industry testimony before the O'Mahoney Oil Committee has been that with a proper price for oil, and with freedom from government regimentation and restriction, this country can for the foreseeable future supply its oil requirements from its own internal resources, Ralph T. Zook, president of the Independent Petroleum Association of America, said.

Ickes to Negotiate Pact—As Secretary Morgenthau's resignation was announced, President Truman spiked rumors that Ickes would follow suit by saying that the Secretary of the Interior would go to London shortly to negotiate the Anglo-American oil agreement. Page 55.

War Production in '44—WPB's J. A. Krug in a report about 1944 war production revealed that at the end of last year demand for high-octane aviation gasoline at the end of last year had outstripped even the high peak production which had been attained. Page 54.

Chinese Pipe Line—Arrangements have been completed for a 900-mile pipe line from the Yumen field in northwestern Kansu to the Kialing River port of Kwangyuen, 200 miles of Chungking. It will carry high-octane gasoline. Page 60.

Western Canada Surveys—A number of major companies are busy with geological, geophysical, etc. crews in Western Canada. Page 56.

PAW Appropriation Held Up—The war agencies bill, which includes appropriations for PAW, and which should have been enacted before June 30, has been held up because of the fight over the FEPC, but the 10 affected agencies are continuing under a resolution until the appropriation muddle is straightened out. PAW's figure is $3,968,000.

FPC Outlines Subjects for Hearings As September Date Is Set for First

First hearing in the Federal Power Commission's natural gas investigation will open at Kansas City, September 18, with subsequent hearings in Oklahoma City, October 9 and New Orleans, October 30.

Later in the year and early in 1946, hearings will be held in Texas and other producing areas and in some of the consuming centers.

Chairman Basil Manly declared the investigation is not a formal proceeding such as the commission usually conducts, but is intended "to develop information for the use of the Congress, the commission and the public generally."

The meetings will be designed, he said, to furnish all interested persons with an opportunity to present their views with a minimum expenditure of time and money; obtain as much information as is possible on all matters relative to the investigation; have all such information presented in the record as expeditiously as possible, and provide opportunity for testing the validity of the information which is presented.

To enable the various interests to prepare their presentations, the commission is circulating an outline of the subjects to be covered, based largely on suggestions which have been received from industry and other sources.

The outline breaks the inquiry down into seven phases, as follows:

Reserves: Proven reserves of recoverable gas; recent important discoveries and prospects for future discoveries; factors involved in probable life calculations, and life history of typical outstanding fields which have been abandoned or greatly depleted.

Practices and problems as related to *production for interstate commerce:* Technical factors related to peculiar properties of natural gas; special problems in the production of casinghead gas; data, by years, on gross production and marketed production; development of

coordinated practices in production; effects of taxation on gas, gas producing facilities and leaseholds, and field practices in relation to production.

Extent and control of *physical waste:* Kinds of waste, extent of physical waste, and remedial measures—accomplishments and further steps to be taken.

State laws governing production, waste and conservation: History of state control statutes; recent developments and present situation as to state conservation legislation and its administration, and legislative history, activities and accomplishments of the Interstate Oil Compact Commission.

Interstate pipe lines: Development of long-distance transmission lines; significance of the large investment required; sales and rate data on pipe line companies; problems of eminent domain relative to pipe line construction; effect on pipe line companies of restrictions on export and import of natural gas in interstate commerce, and requisites of a sound public policy with respect to the expansion of interstate natural-gas pipe lines in the postwar period.

Utilization of natural gas: Policies regarding the use of natural gas; characteristics of available data on utilization; utilization for 1937 and 1943 by classes and functions; question of controlling "end use"; use of natural gas in the manufacture of carbon black, and economic relations of natural gas with competing fuels and raw materials.

Potentialities of *synthetic production:* Costs; processes; recent foreign developments; extent of development of synthetic processes by U. S. companies, government agencies and foreign interests, and national defense.

Texas Planning Attack On Encroachment by FPC

Members of the Governor's committee engaged in opposing the encroachment of the FPC into Texas will take over the services of three committees named by the Texas Mid-Continent Oil & Gas Association and through these prepare evidence and arguments to be presented by the Railroad Commission and the attorney general of Texas.

Charles I. Francis of Houston, is to head the legal committee, D. A. Hulsey, Dallas, the committee on economics and statistics, and E. DeGolyer, Dallas, the engineering committee.

When the final plans are completed, they will be brought back to the committee as a whole for approval. While state officials will sponsor the defense, they will use legal talent and witnesses supplied by the industry wherever these will be most helpful.

No FPC hearings have been scheduled for Texas and the committee did not determine whether it would enter appearances at those three hearings scheduled.

Decision was postponed on the advisability of appearances before the O'Mahoney Oil Committee when that committee is broadened to include a full investigation of natural gas.

Proposed Public Domain Leasing Act Changes Would Benefit Oil Industry

Two years of conferences between representatives of the industry and officials of the Interior Department showed their first concrete results last week when Senators O'Mahoney of Wyoming and Hatch of New Mexico introduced legislation for amendment of the leasing act of February 25, 1920.

The amendments, it was explained by O'Mahoney July 6, are designed to facilitate the administration of the leasing act and promote and stimulate the search for oil upon the public domain.

Not all of the amendments suggested by the industry were included in the bill, he said, but those which were included are believed to be acceptable to the Interior Department which, however, has made no comment.

The question of public lands leasing was one of the subject taken up by O'Mahoney's Investigating Committee during hearings last month, with representatives of the industry explaining the efforts which have been made for revisions of policies and leases which they held deterred development of the oil resources under the public lands.

Chief Changes Listed

Principal amendments to the law contemplated by the O'Mahoney-Hatch bill are as follows:

(1) In order to adjust the law to the greater difficulties now encountered in the search for oil, the acreage limitation for one person, association, or corporation in any one state is increased from 7680 acres to 15,360 acres, and the present limitation of 2560 acres in a single field is eliminated.

(2) Advance rental is terminated upon discovery and a minimum royalty of $1 per acre, per year, is substituted.

(3) Assignments to qualified lessees are permitted without the advance consent of the secretary, but the original lessee and his bondsmen continue to be obligated.

(4) Any lease upon which discovery has not been made but upon which drilling operations are being conducted, at the expiration of the five-year term, is extended for a period of two years. Leases withdrawn or excluded from a unit or cooperative plan, after the end of the primary term, are likewise extended. In addition, an extension of two years is allowed for the assigned portion of a lease on which production has been discovered, when the assignment is made after the expiration of the primary term.

Cooperative Provision

(5) The present law which provides that any cooperative or unit plan shall give the secretary power to control prospecting, development, and production is made discretionary instead of mandatory so that cooperation with state authorities may be facilitated.

(6) In cases where the secretary is not satisfied with the field posted price, the bill requires the secretary to take the oil royalty in kind. The benefits of the O'Mahoney act of December 24, 1942, by which a flat royalty of 12½ percent is granted for the discovery of new oil for a period of ten years, are extended to lessees who have agreed to contribute "dry hole" money to the discovery of the well for that portion of the leased lands determined by the secretary to be equitably entitled to the reward.

Latin American Petroleum Helps Meet U. S. Needs

More than 9,685,000 barrels of crude were brought into East Coast ports from Latin America by tanker during the six weeks ended June 23, PAW announced July 6.

The imports represented more than 28 percent of all the crude received in District 1 during the period, and compared with 5,366,000 barrels, or less than 18 percent of all receipts, in the corresponding period last year.

It was the first disclosure by PAW of foreign oil import figures, heretofore kept secret because of the submarine menace.

With tankers carrying more of the load, rail schedules to the Atlantic Seaboard have been rearranged and tank car receipts during the week ended June 30 averaged 363,863 barrels a day. The Big Inch pipe line delivered an average of 308,071 barrels daily and the Little Big Inch an average of 158,888 barrels daily, the product deliveries at terminal dropping because military gasoline was placed in storage en route.

Oil Being Produced in Drente, The Netherlands

Oil has been found in the moor lands of the northeastern province of Drente in the Netherlands, the daily output being 10 long tons from 2650 feet. The Hengelo power station in Overijesel province which supplies electricity for outlying provinces is getting the oil which may soon total 36 tons daily.

The new field, situated between Coevorden and the German frontier, consists of 14 derricks, 3 of them in the Netherlands and 11 on German soil. A government announcement says "it remains to be seen whether the production will turn out to be a paying enterprise as it has often happened that wells run dry after only a few months."

The soil around Coevorden is of glacial and pre-glacial origin with cretaceous layers at 1050 feet. The preglacial layers are fine sand or loam and encountered at 30-66 feet. Glacial top soil has a thin layer of boulder clay. In this part of Drente there is a good deal of peat cutting.

Interstate Asks Permit to Extend Mississippi Line

Interstate Pipe Line Company has applied to PAW for approval of an extension of its Mississippi trunk line system from the Mallalieu field, Lincoln County, to the Gwinville crude and condensate area Jefferson Davis County. This new project will involve the laying of 36 miles of combination 10-inch to 6-inch line. The company has completed work on its 50-mile 12-inch trunk line from Baton Rouge, Louisiana to Liberty station, Liberty County, Mississippi. While a 32-mile, 10-inch extension from Liberty to the Mallalieu field is 25 percent complete. Right-of-way is being cleared for a 37¾-mile, 8-inch extension from Liberty Junction to the Cranfield, Adams County, Mississippi.

Humble Oil & Refining Company is building a 3-mile, 4-inch pipe line to extend from its hub gas-condensate pool, Marion County, Mississippi, to a tank car rack on the F. M. & O. Railway near Keene, Mississippi. The condensate production will be consigned to an East Coast refinery.

Rogers Lacy of Longview, Texas, owner of extensive gas acreage in the Carthage field, Panola County, Texas, has purchased P. H. Pewitt and Associates 15 million-foot daily capacity gas recycling plant in the Joaquin field, Shelby County, Texas, and will move the equipment to the Carthage area. The Joaquin plant has been idle the past year.

Tanker Freight Rate Surcharges Are Reduced

Important reductions in tanker freight rate surcharges applicable to movements of bulk liquid cargoes in various Western Hemisphere trades were announced by the War Shipping Administration July 1, effective immediately.

A uniform and considerably reduced surcharge of only 10 percent was ordered on basic freight rates on bulk petroleum and its products moving to and between ports outside the continental United States, eliminating the many individual and widely varying surcharges previously effective. Surcharges similarly were reduced to the 10 percent level in the case of many other bulk liquid cargoes carried in tankers, including benzol.

A number of changes in basic freight rates were made for the South American trades and a new scale of small tanker rates was fixed for operations to the Windward and Leeward Islands, British Guiana and the Netherlands Guiana.

Government Operates Oil Plant at Port Arthur

The Texas Company's refinery at Port Arthur, Texas, is operating under federal government supervision following a seizure order issued July 1 by President Truman.

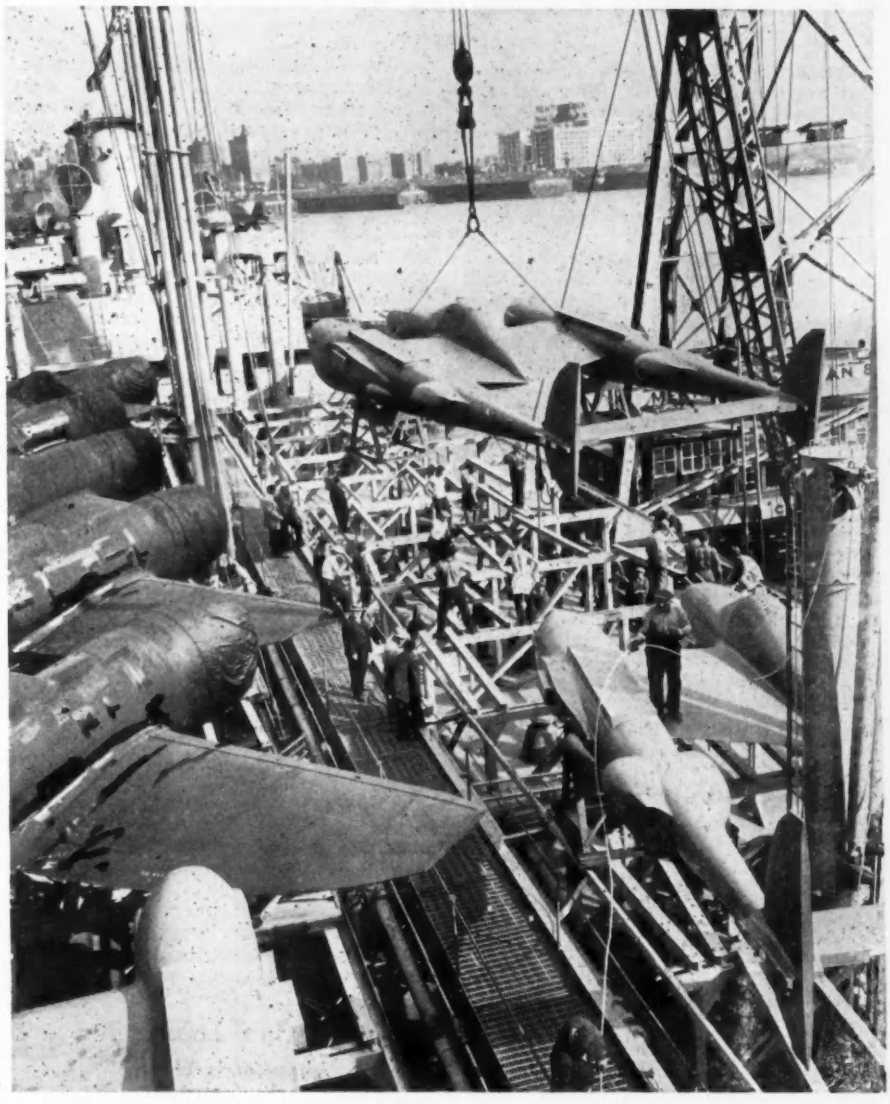
One of the nation's greatest producers of 100-octane gasoline and navy fuel, the plant was taken over by A. P. Frame, director of refining for the Petroleum Administration for War, and Harry King, his assistant.

The president's seizure order was designed to end a walkout of 530 negro employes.

Frank L. Wallace, plant manager, continues to run the refinery under supervision of the PAW.

Making it clear that he considered the interruption of the flow of oil products a highly serious matter, President Truman based his order on "a real, substantial and immediate emergency in the form of a threatened interruption of the operation of the plants and facilities as a result of a labor disturbance."

WAR MATERIALS ABOVE AND BELOW



With her tanks filled with millions of gallons of high octane aviation gasoline, this tanker, operated by the Socony-Vacuum Oil Company Inc., makes ingenious use of its deck by transporting speedy P-38s and P-47s to American fighting forces. Engines and other vital parts of the plane are covered with tarpaulin and water-resisting oil. The planes are securely shackled to the super-deck so that rough seas will not loosen them.

Tanker Deliveries

One private and 13 standard tankers were delivered by United States shipyards during June, it was reported July 5 by the Maritime Commission.

Sun Shipbuilding and Dry Dock Company, Chester, Pennsylvania, and the Kaiser Company Swan Island yard each delivered four standard tankers during the month, it was said, while Alabama Dry Dock and Shipbuilding Company, Mobile, delivered three, and Marinship Corporation, Sausalito, California, delivered two. The private tanker was delivered by Bethlehem-Sparrows Point Shipyards, Inc., Sparrows Point, Maryland.

Synthetic Rubber Production Above Rated Plant Capacity Is Anticipated

Production of synthetic rubber last year amounted to 737,000 tons, and next year's schedule calls for 1,200,000 tons, or more than the world consumption of natural rubber in any year before 1941, it was disclosed July 2 in a report on the rubber program by S. T. Crossland, executive vice-president of Rubber Reserve Company.

Most of the production is from the 51 government-owned plants, which turned out about 456,000 tons during the first half of this year and are scheduled for approximately a million tons for 1945.

The average cost of producing GR-S, the general purpose synthetic rubber manufactured in large volume, is 30.7 cents per pound, with the cost at the lowest-cost project 10.9 cents, but much lower postwar costs are seen. These figures, however, did not include plant amortization and interest charges, program administrative and sales expense, or other items involved in production by private capital in competitive markets.

"The costs of production presently being obtained reflect the varying prices of ingredient materials which are attributable to wartime conditions, particularly wartime prices of grain alcohol which is used in substantial quantities to produce butadiene in the government program," Crossland explained. "However, costs are showing a uniform downward trend, and it is felt that eventual production costs will be competitive with natural rubber at prewar prices."

War Production Board requirements will necessitate the production of approximately 985,000 tons of synthetic rubber by the government plants this year and 1,176,000 tons in 1946, or approximately 120 and 140 percent, respectively, of their rated capacity.

To meet these requirements, Crossland reported, it will be necessary not only that present facilities be operated at a level far in excess of that heretofore achieved, but also that certain modifications and additions be made to existing facilities. It will also be necessary to obtain the necessary chemicals, alcohol and petroleum feedstocks, and unless the program can retain the technical and skilled personnel it now has, and also obtain such additional personnel as is necessary for the operation of the plants, it will be impossible to produce the amount of rubber required.

"Pending the liberation of the occupied rubber producing areas and during the time required to bring the plantations up to a substantial percentage of their former capacity, it is anticipated it will be necessary for the United States government synthetic rubber plants to operate at a high rate," Crossland said.

"The results of continuing developments with respect to the utility and cost of synthetic rubber and the relationship between supply and demand for world needs, after the complete rehabilitation of natural rubber production in the Far East, will largely govern the future and the ultimate destination of the government's program."

Aviation Gasoline Situation At Close of 1944 Revealed

Demand for high-octane aviation gasoline at the end of last year had outstripped even the terrific acceleration of production which the oil industry had developed, it was disclosed last week by J. A. Krug, chairman of the War Production Board, in a report on war production in 1944.

Krug did not reveal whether this situation threatened to hamper military operations had the war in Europe not ended when it did, but said that round-the-clock bombing in Europe and the mounting activity of the B-29 heavy bombers in the Pacific, plus all the air activity necessary to transport men and materials to and from widespread fighting fronts, had sent aviation gasoline requirements "into stratospheric figures."

Outlining the problems which the government and industry faced and overcame, Krug pointed out that 1944 production was 80,600,000 barrels more than that of 1943, and that while at the beginning of the defense program the Army and Navy were consuming less than 4000 barrels per day and exports were running in the neighborhood of 10,000 barrels, by December, 1944, requirements had increased almost 50 times from the early figure and were expecting to go even higher this year.

At no time, however, according to PAW, was there any shortage of gasoline for the operations that were undertaken.

Oil Money Said Loaned for Elliott Roosevelt's Radio

Widespread borrowing activities of Brigadier General Elliott Roosevelt to finance his radio operations in the Southwest, reached into the oil industry as well as the grocery trade (he got $200,000 from John Hartford, head of the A and P chain) and other sources.

Treasury experts, it was disclosed last week, are in Texas checking information on two loans totaling $500,000 made by state oil interests. One of the loans is said to have been for $300,000. The other for $200,000.

The investigation into Roosevelt's financial maneuverings was precipitated by the disclosure that Hartford washed out his loan for a $4000 check from Jesse Jones, then head of the Reconstruction Finance Corporation. The House Ways and Means Committee is pushing an investigation of the income tax angle on loans obtained by young Roosevelt. About three quarters of a million dollars are involved in loans which have been uncovered so far.

New Products Listed for Shell's Deer Park Plant

Placing in operation of a new unit for the production of allyl chloride and allyl alcohol at Shell Oil Company's Deer Park, Texas, refinery has opened the way for a promising new field of plastics and synthetics. The new allyl unit is the first in the nation to begin commercial production of allyl chloride, and the second to produce allyl alcohol commercially. Products derived from these twin chemicals range from pharmaceuticals to special new types of plastics.

One of the chief uses of allyl chloride is the production of such pain-easing drugs. Probably the best known of the allyl drugs is cyclopropane, an anaesthetic gas which puts the patient to sleep quickly and with minimum after-effects, since its high potency permits administration of large amounts of oxygen. Allyl chloride also is the raw material for a vasoconstrictor drug used in the treatment of colds, allergic rhinitis, hay fever, and sinusitis.

In addition to its medical uses, allyl chloride is expected to be the starting point of a broad new field of plastics and resins based upon carbohydrates, such as starch, cellulose and sugar. Experiments on allyl starch have produced a coating material which is exceptionally hard and strong, and resistant to heat and solvents.

The other allyl twin, allyl alcohol, opens the way to a new group of allyl resins which represent a new type of plastic. Reacting with other chemicals, allyl alcohol forms a liquid which hardens into a clear, transparent solid with a smooth, hard and glossy surface. Since the material is formed without the aid of the enormous pressures needed in most plastics, laminates of the allyl resins can be made, not only in flat sheets, but also in complex curved shapes, such as required for airplane parts and machinery housings. These laminates are strong and are being used in making supports for self-sealing aircraft fuel tanks, flak curtains and flak vests.

An important advantage of the allyl resins is that laminates can be formed without the use of costly molds which would be needed if high pressure were required. This feature makes it possible to avoid large investments in pressures and equipment.

Thatcher Named Assistant Head of Materials Division

Appointment of Edward R. Thatcher of San Francisco as assistant director of the materials division in charge of foreign materials requirements was announced last week by PAW. His former post as director of materials for District 1 will be filled by George Frederick Will of Shell Oil Company, New York.

Thatcher, who served in the Army in World War I, has had 26 years experience in the industry, all of it with Standard Oil Company of California which he joined in 1919.

Ickes to Negotiate Oil Pact

President Truman last week spiked all speculation over an imminent change in the leadership of the Interior Department, disclosing July 5 that Secretary Ickes would head the United States delegation which will negotiate a revised oil agreement with England.

The President said that Ickes would go to London to discuss the revision with British officials. The meetings, he said, would take place in the near future, but no specific date has been set.

It is not expected that the Anglo-American oil talks will take place until after July 20, when results of the July 5 election in England will be announced and it will be known what the new government will be.

The treaty was the subject of discussion during the San Francisco world security conference at a meeting between Senator Tom Connally and William R. Boyd, Jr., chairman of the PIWC, who reportedly announced that the industry now is satisfied with the new pact, written to meet the objections raised to the original version signed las August.

Rocky Mountain Association Directors to Meet July 25

A meeting of the board of directors of the Rocky Mountain Oil and Gas Association will be held in Casper, Wyoming, July 25, H. O. English, executive secretary, has announced.

Chairmen of the various association committees will present their programs to the board for approval. Committee chairmen, appointed by Paul Stock, president, include H. H. Healy, The Ohio Oil Company, legal and legislative committee; Warren Skelton, public lands committee; J. F. Cullen, Stanolind Oil & Gas Company, taxation committee; Carroll Kirk, Kirk Oil Company, production committee; and Fred Goodstein, finance committee.

To be present at the July meeting and participate on the program are Ralph T. Zook, president, and Russell B. Brown, general counsel, Independent Petroleum Association of America; Earl Foster, general secretary, Interstate Oil Compact Commission; Clarel B. Mapes, Mid-Continent Oil & Gas Association; and Hugh L. Sawyers, New Mexico Oil & Gas Association.

Tarakan Oil Is Being Delivered to Military

As a result of lend-lease and reverse lend-lease agreements between the Netherlands and United States governments, our military authorities already are receiving petroleum from the newly liberated island of Tarakan, it was disclosed last week by the Foreign Economic Administration.

FEA did not make known the amount of oil obtained, which it said will be reported later by the military.

The agreements provide that the Netherlands will supply directly to our military authorities in the theatre of operations such critical materials as petroleum whenever military operations result in such materials becoming available. This means, FEA explained, that arrangements already have been made for the United States to obtain other needed materials, such as rubber, when it becomes militarily possible.

East Texas Deal

Stanolind Oil and Gas Company has purchased the remainder of the producing properties held in the East Texas field by J. L. Collins & Company and R. L. Wheelock and J. L. Collins for $5 million, or an average of $75,530 per well. This deal involves 3 leases on 294 acres with 61 wells prorated to 1220 barrels daily held by Wheelock & Collins while J. L. Collins & Company's holdings consisted of 3 leases of 35.02 acres with 7 wells prorated to 140 barrels daily.

Crude Oil Production in the United States

(Estimates compiled by The OIL WEEKLY. All figures indicate daily averages, in barrels.)

STATE OR DISTRICT	PRODUCTION IN WEEK ENDED July 7	June 30
Alabama	700	700
Arkansas	80,100	79,650
California	947,000	947,200
Colorado	11,050	11,250
Florida	250	15
Illinois	198,100	213,500
Indiana	12,700	12,900
Kansas	242,300	273,250
Kentucky	30,700	30,600
Louisiana	366,050	368,050
North Louisiana	69,200	69,200
South Louisiana	296,850	298,850
Michigan	48,900	46,550
Mississippi	52,050	51,200
Missouri	100	100
Montana	26,035	24,570
Nebraska	900	900
New Mexico	104,100	104,400
New York	13,350	13,300
Ohio	6,650	6,550
Oklahoma	388,750	388,400
Pennsylvania	37,100	36,900
Tennessee	35	35
Texas	2,209,350	2,180,400
Upper Gulf Coast	568,900	563,100
East Texas Field	379,500	377,600
Rest of Eastern Texas	139,050	139,850
Lower Gulf Coast	255,400	253,550
Southwest Texas	83,750	82,800
South Central Texas	21,500	21,350
West Texas	521,400	497,550
North Texas	152,350	154,600
Panhandle	87,500	90,000
West Virginia	9,050	9,100
Wyoming	108,450	110,300
Total United States	4,893,770	4,909,820

Bureau's July Estimate Is Below PAW Figures

A daily production of 4,861,300 barrels of domestic crude will be required this month to meet market demand, it was estimated last week by the Bureau of Mines—18,600 barrels less than called for by PAW certifications.

The bureau disclosed the results of its statistical survey for the first four months of the year, showing that production of domestic crude averaged 4,777,000 barrels daily, a gain of 355,000 barrels over the same period in 1944, while demand for domestic crude averaged 4,753,000 barrels daily, an increase of 257,000 barrels.

Total foreign and domestic crude runs to stills averaged 4,746,000 barrels daily, 363,000 barrels above the 1944 average.

More Heating Oils Seen From Midwestern Plants

Production of heating oils by midwestern refineries will be boosted as a result of additional supplies now coming in from foreign sources and other areas in the United States which will permit a cut of 30,000 barrels a day in their production of Navy 7-0-2 diesel fuel oil, it was announced July 4 by PAW.

An agreement has been negotiated with the Navy, it was said, by which requirements of the oil will be obtained from sources other than the Midwest, where production will be reduced from 50,000 to 20,000 barrels daily.

The additional civilian production will permit the same allowance for home-heating oil as was in effect last year without involving replacement of kerosine and distillate from uneconomical sources and will make possible the resumption of some ships of oil and kerosine to District 1.

Foreign Producing Company Is Formed by Three Firms

Sinclair Oil Corporation, Cities Service Oil Company and Richfield Oil Corporation of California have formed a foreign producing company under the laws of Delaware and will operate as Tri Pet Corporation.

The corporation's first subsidiary is now being formed in Colombia, under the name of "Companias Unidas de Petroleo," with offices in Bogota, under the management of W. H. Donohue. Applications have been filed with the Colombian government for seven concessions on national lands totalling about 760,000 acres. Negotiations are also under way with private landowners in Colombia to acquire extensive lease rights.

Directors of Tri Pet are L. V. Stanford and H. L. Phillips, of Sinclair; B. S. Watson and R. V. Whetsel, of Cities Service; and Charles S. Jones, of Richfield. L. V. Stanford will serve as president; R. V. Whetsel, vice president; Marvin L. Gosney, treasurer; and J. Von Bevern, secretary.

Intensive Survey of Western Canada Being Continued by Major Companies

Ten major Canadian and American oil concerns, in addition to the string of active Canadian independents, are continuing the intensive geological, geophysical and sub-surface investigation of Western Canadian oil prospects which has been gaining momentum for several years. The 1945 program of the ten concerns is as large, and in some cases larger, than in any previous year.

Imperial Oil, Ltd., Canadian subsidiary of Standard Oil Company of New Jersey, is, as for many years past, the leading operator in Western Canada, with activities extending across the Plains of Saskatchewan, westward to the Alberta Foothills, and north over a thousand miles to the Northwest Territories.

Six Groups at Work

In Alberta, Imperial's 1945 program includes two seismograph parties (one in the Foothills, the other on the South Plains), and four surface geological parties (two Foothills, two South Plains). Its drilling program, on its own behalf and through subsidiaries, includes maintenance of two rigs on Foothills wildcat drilling, two on South Plains wildcatting, eight on Turner Valley proven and semi-proven drilling, and participation with other companies in two Foothills wildcats (Brazeau, Stolberg).

In southern Saskatchewan, Imperial is operating a double-shift seismograph party (equivalent to two), four core-drill parties and two surface geological parties. In addition, in its own name and through the subsidiary Norcanols, it has two rigs engaged in deep test wildcat drilling. In the Northwest Territories, in the general activity of the Norman Wells field, Imperial is understood to have a seismograph party, a gravity-meter, and about three surface geological parties working.

Standard Oil Company of California, largest and most successful operator on the Southern Alberta Plains, is continuing a big-scale geological, geophysical and sub-surface exploration program in this area. It is understood to have two seismograph parties, a slim-hole test drilling party, two gravity-meters and two surface geological parties engaged on the South Plains. At the present time it has six rigs engaged in deep drilling, four in development and extension drilling in the Conrad field (discovered by Standard in 1944) and two in similar drilling in the Princess Devonian field (discovered by it in 1944). In addition, it is currently participating with others in a South Plains Devonian wildcat south of Princess and in the deep Brazeau test in the Alberta Foothills. It is expected to undertake considerable further wildcatting on the Plains.

Shell Oil Company of Canada, which made the first potentially major oil discovery in the Foothills since Turner Valley (at Jumping Pound, late in 1944), is concentrating on the Foothills Belt, with preliminary work under way on the Central Alberta Plains. Its 1945 program includes two seismograph parties (concentrating on the Central Foothills, but also doing some work in the South Foothills and on the Central Plains), a gravity-meter (working on the Central Plains), and two surface geological parties (in the Central Foothills). Current drilling includes one rig following up its Jumping Pound discovery, and participation with others in the Brazeau and Stolberg tests in the Central Foothills.

McColl-Frontenac Oil Company, Canadian affiliate of The Texas Company, has a seismograph party engaged on the Southeast Alberta Plains, and a surface geological party in the north Central Foothills. While doing no drilling at the moment, the company has drilled a number of South Plains wildcats the past few years, and probably will follow up current surveys with new drilling.

Socony-Vacuum Exploration Company took its first step into Western Canadian drilling with participation in the current Brazeau wildcat in the Central Alberta Foothills. Its current exploration includes three surface geological parties, one working in the northeast corner of British Columbia, and two in the Northwest Territories.

Gulf Research & Development Company has an active geological and geophysical program under way, concentrating on the Alberta Foothills, but has not yet engaged in drilling. Its 1945 program includes one seismograph party, working in the Pincher Creek-Blood Indian Reserve area in the South Foothills and bordering Plains, a gravity-meter, working in the Central Foothills, and a surface geological party, in the Foothills.

British American Oil Company, largest Canadian-controlled integrated oil concern, has a seismograph party working on the South Alberta Plains, north of the Princess field, and has a staff engaged in general geological work. This company, an active participant for some years in Turner Valley development, has done some wildcat drilling on the Plains, with further drilling expected to follow current preliminary exploration.

Phillips Party at Work

Phillips Petroleum Company of Oklahome, which drilled its initial Western Canadian wildcat in 1944 (at Sullivan Creek, in the South Alberta Foothills), has a large surface geological party working in the north Central Foothills.

Sun Oil Company of Philadelphia, a newcomer to Western Canada, has a seismograph party working on the South Alberta Plains, west of the Princess field. Rio Bravo Oil Company, unit of Superior Oil Company of California, has done considerable geological work on the South Alberta Foothills, and now has a surface party working in the Central Foothills.

A highlight of the 1944-45 survey program in the Alberta Foothills Belt was an aerial photographic survey covering some 15,000 square miles, and costing around $80,000, undertaken by six of the major groups interested in this region. The survey, now completed, was backed by Imperial, Shell, Socony-Vacuum, Gulf, McColl-Frontenac and Rio Bravo. It covered all those portions of the Foothills not previously photographed by the Dominion Geological Survey, and provided a valuable preliminary to more detailed geological study.

Railroad Bottleneck Slows West Texas Oil

The allocation of 46,000 barrels of West Texas sour crude daily to California refineries by PAW during July will be in excess of available railroad facilities.

This oil is to be delivered by four major pipe lines to the Midland rack of The Atlantic Pipe Line Company on the main line of Texas & Pacific Railway Company. The West Coast-bound crude moves from Midland in 78 to 80 car lots, but the steep grade from Toyah to El Paso makes it necessary to split the trains, requiring an extra engine and a full crew. The rail line has been able to average only 35,000 to 36,000 barrels daily due to inadequate engines and workmen in the Toyah-El Paso bottleneck and no immediate relief is in sight.

Yates field production was boosted 10,000 barrels daily to provide for the anticipated greater movement to the West Coast. This oil will be delivered to the Midland rack by Gulf Refining Company after the installation of additional pumping units. In the meantime Slaughter field crude delivered to Midland by Texas-New Mexico Pipe Line Company will be substituted until the Yates oil is available.

Rocky Mountain Shipments To Midwest Are Curtailed

Heavy Navy and war shipping demands on the Pacific Coast resulted last week in a PAW prohibition against further shipments of crude oil, asphalt or residual fuel oils from the Rocky Mountain states to the Midwest.

In a July 4 order, PAW clamped the lid on shipments of those products from Montana, Wyoming, Colorado, Utah and Idaho to any of the states in District 2, with but three exceptions. The exception permits shipments to continue to western Nebraska and North and South Dakota; Grand Island, Nebraska; Mitchell, Huron and Aberdeen, South Dakota, and Lenoure and Langdon, North Dakota, because of their accessibility to the Rocky Mountain producing areas, and the others provide for specific shipments to other sections of the Midwest to prevent unreasonable hardship in individual cases and specific shortages.

Supplies of oils covered by the order have been short in the midwestern states, it was explained, but will be provided hereafter from the Southwest.

Active Operations Result in Adding Light and Heavy Fuels to Storage

Crude oil production again set a new all-time record in the week ended June 30, and refinery runs were very slightly under the peak of the previous week, with the result that needed light and heavy grade fuel oils accumulated in storage, while gasoline stocks decreased only in normal volume for the season. The high rate of refinery operations has been possible, however, only by some drawing on crude stocks, runs to stills having continued in excess of domestic production.

U. S. crude production averaged 4,903,000 barrels daily in the week ended June 30, up 5000 from the previous week and 316,000 a day or 6.9 percent higher than the 4,587,000 daily produced in the corresponding week last year. Crude runs to stills averaged 4,999,000 barrels per day, off only 3000 barrels from the revised figure of 5,002,000 daily for the previous week, the highest rate of runs on record. For the June 30 week the runs to stills were 365,000 barrels a day or 7.9 percent higher than those of 4,634,000 daily reported for the comparable week last year. Crude oil stocks totaled 220,974,000 barrels June 23, having decreased 958,000 barrels during the week. The total was 7,886,000 barrels or 3.4 percent less than the 228,860,000 barrels held one year previously.

Gasoline production totaled 15,546,000 barrels in the week ended June 30, up 179,000 barrels from the week before and 1,622,000 barrels or 11.6 percent more than in the like week last year. Stocks of finished and unfinished gasoline were lowered 990,000 barrels during the week to 86,472,000 barrels. That amount was 4,488,000 barrels or 5.5 percent more than the 81,984,000 barrels held July 1, 1944.

Stocks of civilian grade were increased by 580,000 barrels during the week of June 30, 1945, having risen from 46,609,000 to 47,189,000 barrels, and the latter amount was a little more than the 46,581,000 barrels held on the corresponding date last year. Stocks of military and other grades were reduced within the week by 1,570,000 barrels to 39,283,000 barrels, and that quantity was about 4,000,000 more than the 35,403,000 held a year previously.

Production of gas oil and distillate fuel oil amounted to 4,910,000 barrels in the June 30 week, down 104,000 from the week before but 403,000 barrels or 8.9 percent more than output in the like week last year. Stocks were increased seasonally by 452,000 barrels during the week, having risen to 32,213,000 barrels, but that quantity was 3,029,000 barrels or 8.6 percent less than the 35,242,000 barrels held July 1 last year.

Residual fuel oil production of 9,077,000 barrels for the week was 481,000 barrels less than in the previous week but 397,000 barrels or 4.6 percent more than the 8,680,000 barrels produced in the week ended July 1, 1944. Stocks of residual were increased within the week by 595,000 barrels, having risen to 40,488,000 barrels. That total was, however, 12,281,000 barrels or 23.3 percent less than the 52,769,000 barrels reported as of July 1 last year.

May Federal Gasoline Tax Sets New All-Time Record

Federal gasoline-tax collections set a new all-time high in May at $42,631,374, an increase of $13 million over the $29,474,532 received in the preceding month and nearly $16 million above the $26,787,888 collected in May, 1944, it was reported June 28 by the Internal Revenue Bureau.

Lubricating oil taxes also topped previous figures at $9,924,124, the bureau announced, compared with $7,464,777 in April and $5,258,971 in May of last year, and transportation by pipe line contributed $1,585,845, compared with $1,036,285 in April and $1,576,888 in May, 1944.

For the first eleven months of the fiscal year which ended June 30, gasoline returned a total of $370,536,107, an increase of $120,348,122, or nearly 50 percent over the $250,187,985 recorded in the same period a year ago; while lubricating oils returned $79,328,307, an increase of $30,663,721 over last year.

Trends of Operations and Changes in Stocks

Figures on crude stocks are from Bureau of Mines weekly reports; all others from American Petroleum Institute weekly reports, which are estimates on Bureau of Mines basis.

(All figures in thousands of barrels—add 000)

HIGHS AND LOWS OF RECENT YEARS

ITEM	Crude Oil Prod. Barrels Daily	Crude Oil Prod. Week Ended	Runs to Stills Barrels Daily	Runs to Stills Week Ended	Crude Stocks Barrels	Crude Stocks Week Ended	Gasoline Stocks Barrels	Gasoline Stocks Week Ended	Gasoil and Distillate Stocks Barrels	Gasoil and Distillate Stocks Week Ended	Residual Fuel Oil Stocks Barrels	Residual Fuel Oil Stocks Week Ended
Highs:												
1941	4,337	11–22	4,120	10–18	266,187	3–29	99,727	3–29	[1]54,983	11–15	102,448	1– 4
1942	4,337	2– 7	3,961	1– 3	263,208	3–28	[1]109,281	3–14	47,861	11–14	95,857	1– 8
1943	4,436	11–13	4,331	12– 4	245,752	5–29	94,159	3–20	47,187	11–27	72,881	1– 2
1944	4,762	9–30	4,798	12–30	240,992	1– 1	89,162	4– 1	48,863	10–28	64,744	10– 7
1945	4,903	6–30	5,002	6–23	224,079	6– 2	99,012	3–24	38,298	1– 6	56,074	1– 6
Lows:												
1939	[3]1,601	8–26	3,125	2–18	[2]229,127	10–12	71,152	10– 7	20,722	4–15	105,397	4– 8
1941	3,364	1–11	3,490	1–18	240,399	11–15	79,923	10– 4	28,382	4–12	90,914	7–13
1942	3,297	7– 4	3,393	5–23	231,896	12–12	75,934	12– 5	29,240	4–25	72,962	12–26
1943	3,821	1– 9	3,579	3–18	232,191	1– 9	68,182	10–16	30,732	4– 3	57,596	12–25
1944	4,357	1– 1	4,228	2–12	220,258	9– 9	76,302	1– 1	30,232	4–19	49,737	3–18
1945	4,678	1– 6	4,656	1– 6	[4]218,675	3– 3	86,472	6–30	26,483	3–17	38,548	5–26

TRENDS OF 1944 AND 1945

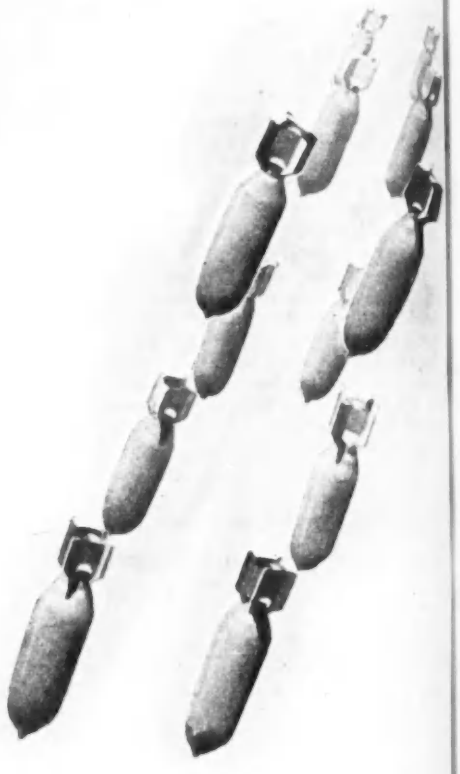
Trends in Week Ended:	Crude Oil Production Daily	Crude Oil Runs to Stills Daily	Crude Oil Stocks Week End	Gasoline Production Weekly	Gasoline Stocks Week End	Gasoil and Distillate Production Weekly	Gasoil and Distillate Stocks Week End	Residual Fuel Production Weekly	Residual Fuel Stocks Week End
1944:									
January 1	4,357	4,453	240,992	13,192	76,302	4,575	42,310	9,141	57,380
January 29	4,409	4,359	240,251	13,427	81,075	4,054	37,266	8,889	52,857
February 26	4,423	4,377	237,137	13,183	85,248	4,558	33,766	8,952	51,387
March 25	4,385	4,443	236,285	13,362	87,287	4,979	31,319	9,013	51,669
April 1	4,383	4,435	234,667	13,824	89,162	4,450	30,530	8,367	51,326
April 29	4,431	4,300	235,342	13,126	88,342	4,284	30,236	8,398	49,985
May 27	4,514	4,532	234,423	13,502	86,468	4,702	32,035	8,568	49,812
July 1	4,587	4,638	228,860	14,052	83,559	4,496	35,360	8,872	52,235
July 29	4,608	4,627	225,112	14,115	82,665	4,833	38,135	8,900	56,280
August 26	4,667	4,698	222,931	14,112	80,740	4,566	41,453	8,680	59,839
September 30	4,762	4,775	222,393	14,494	78,028	4,622	45,329	9,292	64,226
October 28	4,740	4,658	223,235	14,117	79,058	4,772	48,705	8,985	64,382
December 2	4,712	4,693	221,591	14,853	80,427	4,082	45,832	8,981	61,727
December 9	4,704	4,552	220,258	14,611	80,880	4,056	44,436	8,923	60,458
December 16	4,695	4,537	222,075	14,145	82,747	4,353	42,413	8,727	59,280
December 23	4,729	4,682	222,575	14,635	83,355	4,605	40,846	8,798	58,509
December 30	4,705	4,798	222,998	15,342	86,614	4,257	39,495	9,156	57,430
1945:									
January 27	4,727	4,756	221,310	14,957	88,223	4,843	33,651	9,252	51,119
February 24	4,777	4,803	219,351	15,500	95,972	4,958	28,753	9,084	46,713
March 31	4,781	4,677	223,782	14,644	98,758	4,548	26,889	9,184	41,745
April 28	4,805	4,780	223,474	14,633	94,068	4,636	28,273	9,379	39,813
May 26	4,887	4,950	222,831	15,194	89,121	4,667	29,184	9,670	38,548
June 2	4,859	4,804	224,079	15,317	88,696	4,857	29,819	9,437	39,022
June 9	4,853	4,827	221,552	15,256	87,896	4,842	30,339	9,382	38,996
June 16	4,888	4,915	221,932	15,132	87,504	5,342	30,397	9,252	39,482
June 23	4,898	[5]5,002	220,974	15,367	87,462	5,014	31,761	9,558	39,893
June 30, 1945	4,903	4,999	.....	15,546	86,472	4,910	32,213	9,077	40,488
July 1, 1944	4,587	4,634	[5]228,860	13,924	81,984	4,507	35,242	8,680	52,769
Change:									
In week	+5	—3	—958	+179	—990	—104	+452	—481	+595
In year	+316	+365	—7,886	+1,622	+4,488	+403	—3,029	+397	—12,281
In year	+6.9%	+7.9%	—3.4%	+11.6%	+5.5%	+8.9%	—8.6%	+4.6%	—23.3%

[1] All time peak. [2] Lowest between January, 1922 and July 1, 1944. [3] Lowest since October, 1922, due to shutdown of six Mid-Continent states. [4] Lowest since December, 1921. [5] Stocks, June 24, 1944.

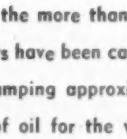
Without Fail

A group of Allied tanks were hopelessly lost in the dense Burma jungles. For their assignment these airmen were to find the lost tanks and guide them back to their base. This is how it was done: on their return from searching out Jap supply dumps and airdromes fliers made pictures of the lost tanks and the surrounding countryside and marked on the shots

the best ways for them to rejoin other Allied forces. They repeated the performance of swooping in low over Jap forces and dropping photos by chutes to the tanks until they were safe.



No. 6 of a series of authenticated missions, the details of which are still military secrets.



Without fail the more than 12,000 Lufkin Pumping Units have been carrying out their mission of pumping approximately 9,000,000 barrels of oil for the war effort. Dependability has made Lufkin *the pumping unit of the world.*

ARMY-NAVY E

LUFKIN

PUMPING UNITS

LUFKIN FOUNDRY & MACHINE COMPANY • LUFKIN, TEXAS

54-Mile Cities Service Oklahoma Line Approved

Approval of an application of the Cities Service Gas Company to construct 54.4 miles of 16-inch pipe line in the Burbank field, Oklahoma, and in Kansas and to add minor facilities at two compressor stations, was announced by the commission July 2. The project is estimated to cost $1,204,478.

With the new facilities, the company will be able to increase its over-all system deliveries by 11,922,708,000 cubic feet per year, some 8,772,811,000 cubic feet of which will be sold to the Kansas City Gas Company for resale to the Kansas City Power and Light Company, and 1,542,128,000 feet will be sold to the Jayhawk Ordnance Works.

The FPC has scheduled a hearing for October 15 on the application of the Metropolitan Eastern Corporation for authority to construct approximately 825 miles of 18-inch pipe line from the Carthage field, Texas, to a point near Hamilton, Ohio.

The line, with appurtenant facilities including five compressor stations with an aggregate of 25,600 horsepower and a dehydration plant, is estimated to cost $23,500,000. It would have an initial daily capacity of 140 million cubic feet of gas, intended to be sold to distributing companies in Ohio.

Andian Line Is Looped To Handle Casabe Output

Tropical Oil Company has reported that before pipe line shipment of crude oil from Shell Oil Company's Casabe field was initiated in March it was necessary to lay a 42-kilometer loop to the 10-inch Andian line north of Barranca Bermeja. Two 8-inch lines connect the system with field storage tanks on the west side of the Magdalena River. It is planned to increase Casabe shipments from the present 5000-barrel daily rate to 15,000 barrels by the end of the current year. The latter rate will absorb all of the excess capacity of the Andian line.

After more than 20 years of service the Andian line has gradually been looped to by-pass worn out stretches, until loops now comprise nearly half of the line's 550 kilometers. The whole line probably will be replaced by a new 12-inch line soon after the end of the war to allow optimum operation of the Casabe field and further development of production in the De Mares concession of the Tropical company.

Oklahoma-Kansas Gas Line Facilities Are Authorized

Cities Service Gas Company has been authorized to construct and operate additional gas pipe line facilities in Oklahoma and Kansas, including 48 miles of 16-inch from the company's present facilities near Shidler, Oklahoma, to its Caney compressor station in Montgomery County, Kansas; 6.4 miles of 16-inch interconnecting its Altoona and Vilas lines in Wilson County, Kansas; and additional minor facilities at its compressor stations in Montgomery and Allen counties stations, Kansas.

Cost of the program is estimated at more than $1,000,000 and all additional gas, estimated at 12 billion cubic feet a year, will be delivered to existing customers except under specific authorization.

Prior Named President Of Stanolind Pipe Line

F. O. Prior, Chicago, chairman of the board of Stanolind Pipe Line Company, has been elected president to succeed the late Barton P. Sibole, with W. G. Heltzel being named executive vice president and thus becoming the company's top officer at Tulsa, where the company has its headquarters.

F. O. Prior

Other changes caused by the death of Sibole included the election of F. E. Wood, former director, to vice president, and J. L. Shoemaker, former auditor, to comptroller. J. L. Burke and J. B. Harshman were elected to the board to fill vacancies caused by the death of Sibole and the resignation of H. F. Glair. Burke will continue to head the traffic department and his duties will be greatly expanded. Harshman has been promoted from general superintendent to general manager and will take over most of the duties and functions formerly handled by Heltzel.

Further changes in the operating department due to the company's expanding activities include the following: J. J. Boyd, formerly assistant chief engineer, to become general superintendent; C. W. Butler, formerly superintendent of the Rocky Mountain area at Casper, Wyoming, transferred to Tulsa as operating superintendent.

The engineering department will be expanded under Chief Engineer C. M. Scott, and T. R. Aude, formerly senior office engineer, has been promoted to assistant chief engineer.

Kansas Gas Lines Totaling 29 Miles Are Projected

The Kansas Power & Light Company plans to lay 26 miles of new natural gas lines in Barber and Pratt counties, Kansas, and to construct a dehydration plant in Barber County.

An application has been filed with FPC by Consolidated Gas Utilities Corporation for authorization to construct approximately 3.05 miles of 14-inch gas line to replace a like distance of 12¾-inch line which it is proposed to abandon because of deterioration in Sumner County, Kansas.

Rate Reductions Schedule Given FPC By Four Firms

A schedule of rate reductions and refunds for natural gas supplied to four distributing companies and two pipe line systems has been filed with FPC by the Colorado Interstate Gas Company. Under the revised rate schedule the company proposes annual reductions for the distributing systems as follows: Citizens Utilities Company, $41,147; City of Colorado Springs, $114,383; Public Service Company of Colorado, $1,175,335; Pueblo Gas & Fuel Company, $99,666.

Average annual reduction for the pipe line systems: Colorado-Wyoming Gas Company, $177,033; Natural Gas Pipe Line Company of America, $604,070.

In its summary of refunds the company proposes to return $631,384 to Colorado-Wyoming; $1,870,524 to City of Colorado Springs; $3,743,781 to Public Service and $337,418 to Pueblo Gas.

Gulf Begins Purchase of Heidelberg Field Oil

Holding off possible pipe line proration in the Heidelberg and Eucutta fields in Mississippi, Gulf Refining Company started purchasing for its own account on July 1 approximately 3000 barrels daily of oil produced in the Heidelberg field.

All of the production in the two fields heretofore has been purchased by the Standard Oil Company (New Jersey), Louisiana Division. The oil was gathered and delivered to tank car terminal by the Interstate Pipe Line Company for transportation to Standard's plant at Baton Rouge. Interstate will continue to gather the oil and deliver it to the tank car terminal for Gulf for rail shipment northeast.

Gulf is the major producer in both fields which have a combined daily output of about 16,000 barrels. Oil produced in these pools is low gravity, varying from 19 degrees to 23 degrees. Both gasoline and asphalt content of the crude is reported below normal. The well allowable in both pools is 100 barrels daily.

Lone Star Recycling Plant Is Planned in East Texas

The Lone Star Producing Company, Dallas, will seek permit for the installation of a recycling plant in the Chapel Hill multi-pay field, Smith County sector of East Texas, at a hearing July 12 at Austin before the Texas Railroad Commission.

The company proposes to erect a plant capable of handling 50 million cubic feet of gas daily from the 5800-foot Paluxy wet gas zone. Permission will be sought for the injection of gas from the Rodessa series into the Paluxy to maintain pressure in the latter.

China to Build 900-Mile, 6-Inch Line From Yumen Field to Kialing River Port

The China National Resources Commission has completed arrangements for a 900-mile, 6-inch pipe line from the important Yumen field, in northwestern Kansu, to the Kialing River port of Kwangyuen, in northern Szechwan, 200 miles north of Chungking. The new line is to be put in within 18 months and will carry 1200 barrels per day of high octane gasoline, medium grade gasoline, kerosine and light fuel oils needed for military and industrial operations in southeastern China.

The makeshift refinery that has been in operation at the field for two years, producing only straight-run gasoline, is now being replaced by a 1500-barrel thermal cracking unit. This new plant is expected to be completed by the end of the current year.

Terminal storage facilities are to be erected at Kwangyuen, from where most of the products will be carried by river barge to Chungking, until other distributing lines are put in to serve other metropolitan centers as well.

Both the new refinery and the pipe line represent wartime emergency projects designed to make possible the maximum utilization of Yumen crude under existing conditions. A larger refinery and another trunk pipe line will be put in immediately after the end of the war.

The Yumen field has 26 producing wells capable of producing approximately 21,000 barrels per day, according to flow tests. Because of the low capacity of the temporary topping plant at the field, production has been held back to about 12 percent of well potentials. Field development is proceeding, however, and 14 more wells are to be drilled during 1945, in preparation for expanded operations.

Lack of Imports Further Reduces Brazil Oil Supply

Brazil, which depends on the United States for most of its petroleum products, has been hard hit by the war, which has drastically reduced importation of these products, according to International Reference Service.

Since 1939, when imports of petroleum products accounted for about 8 percent of Brazil's total import business, only sufficient gasoline, fuel oils, kerosine and lubricating oils have reached the Brazilian market for strictly essential needs.

Imports in 1942 decreased sharply from the 1941 tonnage, kerosine showing the largest relative decline and lubricating oils the least. Truck and bus transportation has been curtailed and since 1941 drivers of these vehicles have used a mixture of alcohol and gasoline. Gasogenes have been constructed on a fairly large scale but shortages of iron and steel products has limited installations to trucks and busses.

The lack of fuel oils has resulted in less production in the cement industry, while cottonseed oil has been used to a limited extent to replace diesel fuel in locomotives, trucks and tractors, although the cost of this fuel is higher than for diesel oil.

Brazil produces only a small amount of oil from the Baia Basin, where the first commercial producer was completed in 1939. There are three refineries in Brazil and crude oil imports totaled 46,143 metric tons in 1941. Such imports, however, have decreased sharply since that year.

Canada Tests Delayed

On June 20 drilling was reported halted for fishing operations at the two deepest wells so far drilled in Canada. On that date Imperial Oil Company's Coalspur 1 test in the Alberta foothills had been taken to 12,955 feet; and Island Development Company (Cities Service Oil Company-Socony Vacuum Oil Company) was planning to resume drilling at 12,681 feet at its Hillsborough Bay test, Prince Edward Island.

Mexican Refinery and Pipe Line Expansion Proceeding

By December of this year Petroleos Mexicanos will complete the $18,000,000 expansion of facilities under way at its refinery at Atzcapotzalco, suburb of Mexico City, according to Efrain Buenrostro, general manager of the national oil agency. He added that 65 percent of materials and equipment for the construction has arrived from the United States.

The new construction was undertaken primarily to provide facilities for making 100-octane aviation gasoline, but in order to furnish required feed stocks, it was necessary also to provide for increase in the crude intake capacity of the original refinery around which the new plant is being built. The existing plant has crude capacity of about 25,000 barrels a day. It is fed by pipe line from the Poza Rica and Tampico fields, using mostly crude and absorption plant gasoline from Poza Rica but also some crude and gasoline originating in the Tampico producing-refining district.

Along with the refinery construction, the capacity of the pipe line system is being increased to about 40,000 barrels daily from its present capacity of 23,000 a day, Buenrostro stated. This enlargement is in line with that of crude charging capacity of the refinery. The existing pipe line consists of a combination of 10-inch and 12-inch pipe, and the increase of capacity will be accomplished by loops and installation of more pump stations.

Also under construction, according to Buenrostro, is a modern absorption type casinghead gasoline plant at the Poza Rica field, which will take natural gasoline from gas heretofore wasted. One such plant already is in use.

The refinery expansion at Mexico City was undertaken under a $10,000,000 loan from the Export-Import Bank, United States government corporation, in consideration of the granting to the United States government the first rights to purchase part of the output of aviation gasoline and certain other products. The 100-octane unit will function until the end of the war chiefly as one for manufacturing military fuel for military and civilian air routes to South America and other places. The new refining facilities are being constructed by an American refinery engineering concern, under the inspection of an American oil company which contracted to serve Pemex in a consulting and advisory capacity.

Staff Changes Announced By Mene Grande Company

Chester M. Crebbs, president of Mene Grande Oil Company, has announced a number of staff personnel changes, effective July first. James W. Bradbury, who has been serving as district manager at Maracaibo, has been promoted to assistant to the president and transferred to the main office at Caracas. L. T. Jordan succeeds Bradbury as manager at Maracaibo.

Paul Adams, head of the land department since 1923, has retired and is returning to the United States. Paul Hogan has been appointed new head of the department. Also retiring is Roy Newton, drilling and production superintendent in the Lake Maracaibo area. William Dendy succeeds him as superintendent.

Texan Aids in Restoring Oil Fields of Hungary

Major Lawrence R. Hagy of Amarillo, Texas, former member of the firm of Hagy, Harrington and Marsh, Panhandle oil producers, is aiding the Russians restore Hungarian oil and gasoline properties that belonged to Americans before 1940.

Major Hagy recently said that if he and the Russians were successful, midwestern oil fields in the United States can divert more of their production to the war against Japan.

Salaries Reported

An incomplete report by the United States Treasury listed these salaries paid by oil companies: $125,000 to W. S. S. Rodgers and $100,000 to Harry T. Klein by The Texas Company; $120,000 to W. T. Holliday by Standard Oil Company (Ohio); $100,000 to Dan Moran by Continental Oil Company; $98,333 to R. W. Gallagher, $90,000 to Orville Harden and $80,833 to E. Holmany by Standard Oil Company (New Jersey); $70,000 plus $30,000 bonus to Alexander Fraser and $60,000 plus $30,000 bonus to S. Belither by Shell Oil Company.

☆ Oklahoma

West Edmond Extension Broadens Field's Limits

West Edmond extension broadens field limits; Wilcox producer completed on west side of South Moore; Bethany area wildcat dry and abandoned; Carter stakes deep test on McClain block; Halliburton wildcat may open new area east of Stillwater; Ashland hits 2 in Seminole area.

West Edmond: Anderson-Prichard Oil Corporation extended the western limits of the big 4-county area at least a ¼ mile with completion of Wright 1, CSE SW 13-15n-5w, Kingfisher County. A 6-hour potential gauge showed the well good for 260 barrels of oil through casing perforations at 6970-98 feet from Hunton lime. Deep Rock Oil Corporation, Tulsa, entered the big pool and completed its first producer, Whistler 1, CSW SE 10-14n-4w, Oklahoma County, which flowed 40 barrels an hour from the Chimney Hill section of the Hunton. High winds and heavy rains retarded West Edmond work, causing damage to a number of test wells and interrupting communication lines. The pool is averaging about 7 completions a week and nears the 600-well mark.

South Moore: Another deep Wilcox sand producer was completed at South Moore while another test in this horizon was a failure. Barnsdall Oil Company completed Mollman 2, NE NE SE 27-10n-3w, north offset to a dry hole, flowing 260 barrels of oil in 23 hours through casing perforations at 8833-65 feet through small choke. The Wilcox failure was Mid-Continent Petroleum Corporation's Brand 2, NE NE SW 26-10n-3w, drilled to 8898 feet in hard, dry Wilcox. The well will be plugged back for a test of the Bartlesville sand, which is a good producer in wells formerly dry in the deeper horizon.

West Moore: Wood Oil Company's Siler 1, SW SE NE 30-10n-3w, was tested at 7835-90 feet and after being tubed was opened 3 hours and flowed at the rate of 100 barrels an hour. This well is credited with developing new pay for the Moore area in the Bartlesville sand zone. This is an important development in this area. Last year the pool looked like a major strike for Oklahoma in the deep Wilcox zone until several dry holes were drilled, indicating the Wilcox to cover only a limited area of the structure. So-called "dry" holes are now paying off better than ever from the Bartlesville.

Seminole County: Ashland Oil & Refining Company proved additional acreage north of East Seminole at Norvell 1, SW NE SW 6-9n-7e, which started to flow by heads when cleaning out. Drilled to 3684 feet, it plugged back to the Booch sand at 3669-82 feet, where it showed for about 2 barrels of oil an hour before the horizon was shot. Operator's Wallace 1, north offset to Meador 1 in 16-10n-7e, which was abandoned after a heavy oil show, set pipe on top of the Gilcrease sand at 3661 feet, drilled out and swabbed 15 barrels of oil an hour after which the well flowed natural by heads.

Payne County: Erle P. Halliburton's wildcat east of Stillwater, Drum 1, NW SE SE 6-19n-4e, was drilling below 4000 feet to the Wilcox after reporting good oil and gas shows in the Burbank-Bartlesville formation. A sand was logged at 3790 feet with considerable gas showing; a drill-stem test was made at 3725-57 feet and recovered 100 feet of oil and gas-cut mud in an hour. The wildcat is reported running higher than the nearest well drilled in the area.

Oklahoma County: In the area between the Will Rogers airfield and the new gas-distillate area near Bethany, Sohio Petroleum Company abandoned Hayes 1, NE NE SW 8-11n-4w, at 7946 feet. This had been a joint operation with Big Chief Drilling Company. It was plugged back and tested with no shows reported in the Bartlesville and Hunton. Sohio took over L. S. Youngblood et al's Swatek 1, CNW SW 7-11n-4w, and plans to test the Bartlesville sand topped at 7690 feet. North of Bethany, Phillips Petroleum Company's Airport 1, CNE NE 8-12n-4w, was drilling below 5500 feet.

McClain County: The Carter Oil Company, pioneer developer along the eastern rim of the Anadarko Basin, is moving in at Hawkins-C132, CNE NE 34-6n-3w, rank wildcat north of the town of Payne and, like 4 previous McClain County tests, will go to 10,000 feet.

Additional oil shows are reported from Cities Service Oil Company's Lawson 1, SW NW 22-5n-4w, deep test which is being drilled tight. Two cores are reported to have been cut in the Bromide at about 10,820 feet. It was unofficially reported that a drill-stem test at about 10,800 feet had a spray of oil with a recovery of more than 2500 feet of oil and mud in the tester.

40-Acre Spacing Ordered

Following discovery of production in the Bartlesville sand, PAW has ordered 40-acre well spacing in the West Moore pool of Cleveland County, Oklahoma. The Moore area, which includes West Moore and South Moore, is back in the limelight with the discovery that Bartlesville sand production is of the gusher variety and apparently superior to the deep Ordovician Wilcox which was first discovered in both areas.

Wells Completed in the United States in Week Ended July 7, 1945

Data preliminary and subject to revision. Revised and more complete data on all completions shown in monthly summary of drilling, published in second issue of each month. More detailed data on wildcats published in third issue of each month.

State or District	FIELD COMPLETIONS: New Wells *Oil	Gas	†Input	Dry	Total	Old Wells Deepened	WILDCAT COMPLETIONS *Oil	Gas	Dry	Total	ALL COMPLETIONS: This Week	Last Week	Cumulative: This Year	Last Year
Alabama	....	....	....	....	....	....	....	....	....	....	....	3	16	15
Arizona	....	....	....	....	....	....	....	....	....	....	....	....	....	3
Arkansas	3	....	....	2	5	....	....	1	....	1	6	2	91	107
California	31	....	....	3	34	....	....	....	2	2	36	47	1,101	1,036
Colorado	2	....	....	....	2	....	....	....	....	....	2	....	14	12
Florida	1	....	....	....	1	....	....	....	....	....	1	....	10	1
Georgia	....	....	....	....	....	....	....	....	....	....	....	....	4	1
Illinois	22	....	....	8	30	....	2	....	11	13	43	31	854	888
Indiana	....	....	....	....	....	....	....	....	....	....	....	7	146	142
Iowa	....	....	....	....	....	....	....	....	....	....	....	....	1	2
Kansas	14	1	....	12	27	3	1	....	12	13	43	35	817	906
Kentucky	....	....	....	....	....	....	....	....	....	....	....	7	213	364
Louisiana	14	7	....	4	25	....	....	....	4	4	29	22	513	377
North Louisiana	10	7	....	4	21	....	....	....	3	3	24	3	184	127
South Louisiana	4	....	....	....	4	....	....	....	1	1	5	19	329	250
Michigan	6	4	....	4	14	....	....	....	2	2	16	37	391	324
Mississippi	4	....	....	....	4	....	....	....	6	6	10	5	198	78
Missouri	....	....	....	....	....	....	....	....	....	....	....	....	16	14
Montana	4	....	....	....	4	....	....	....	....	....	4	5	101	160
Nebraska	....	....	....	....	....	....	....	....	1	1	1	....	3	7
New Mexico	7	....	....	2	9	....	....	....	1	1	10	9	227	217
New York	15	....	10	....	25	....	....	....	....	....	25	25	531	649
Ohio	1	1	....	2	4	....	....	....	....	....	4	8	377	437
Oklahoma	28	2	1	9	40	....	....	....	4	4	44	49	1,205	895
Pennsylvania	27	5	15	....	47	1	....	....	....	....	48	52	1,407	1,477
Tennessee	....	....	....	....	....	....	....	....	....	....	....	....	2	7
Texas	83	14	....	24	121	3	1	2	26	29	153	154	3,744	3,062
E.Tex.Bor. Co.'s	....	6	....	....	6	....	1	....	....	1	7	2	41	12
E. Texas Field	....	....	....	....	....	....	....	....	....	....	....	....	....	3
Rest of E. Texas	2	1	....	1	4	....	....	....	3	3	7	2	116	154
North Texas	14	....	....	12	26	1	....	....	6	6	33	45	860	713
W. Central Tex.	5	....	....	1	6	....	....	....	2	2	8	9	245	205
West Texas	28	....	....	2	30	....	....	....	3	3	33	35	967	813
Tex. Panhandle	4	6	....	....	10	1	....	....	1	1	12	16	300	121
G. Coast, Upper	8	....	....	1	9	....	....	....	3	3	12	13	366	284
G. Coast, Lower	17	....	....	2	19	....	....	1	3	4	23	20	535	475
Southwest Texas	5	1	....	4	10	1	....	1	3	4	15	10	264	231
S. Central Tex.	....	....	....	1	1	....	....	....	2	2	3	2	50	51
West Virginia	2	13	....	4	19	1	....	....	....	....	20	18	405	472
Wyoming	4	1	....	1	6	....	....	....	1	1	7	1	72	81
Total U. S.	268	48	26	75	417	8	4	3	70	77	502	517	12,459	11,734

* Includes distillate wells. † Includes salt water disposal wells.

☆ Kansas

New Pools Registered for Barton and Rooks Counties

New pools registered for Barton, Rooks counties; good producer shows in test west of Wichita; Gutowsky drills "doodle-bug" wildcat in Cowley; gas logged in test west of Nunn pool; Pawnee County wildcat gets saturated Lansing lime.

Barton County: Black-Marshall Oil Company's system of examining cuttings from abandoned wells and reworking the area has again paid off with the opening of a new field a mile west of the big Kraft-Prusa area. Miller 1, SW SW SE 3-16s-12w, was completed for 117 barrels of oil plus 20 percent water per day from Arbuckle lime at 3342-45 feet, total depth. Harber Drilling Company extended the Halstead pool nearly ½ mile at Berger 1, SW SW NE 14-23s-2w. At 2937-90 feet in chat the hole filled with oil and the well started to flow.

Rooks County: A discovery loomed between the Zurich Townsite and Zurich pools at Darby & Bothwell, Incorporated's Vohs 1, NE NE NE 14-10s-19w. Cutting the Arbuckle lime from 3549-63 feet and with free oil showing at 3559 feet, the well filled 2000 feet with oil in 4 hours and operator was preparing to acidize for production test.

Sedgwick County: About 2 miles west of Wichita, George Fuller's Ternes Estate 1, NW NW SW 22-27s-1w, acknowledged pool opener, pumped 100 barrels of clean oil in 3 hours from the Lansing lime after having been shut in for several days. Testing continues while a number of new locations are in the offing.

Cowley County: Ace Gutowsky of Oklahoma City, who discovered the West Edmond pool on "doodle-bug" geology, has worked his "bug" in an area south of Arkansas City, where he believes a big oil field exists. His Trimper 1, SE SE NE 11-35s-3e, was drilling below 2410 feet. Nearest production is the Murphy pool 5 miles west, while the Denton gas field lies about 4 miles east of the Trimper test.

Finney County: The Atlantic Refining Company's Wright 1, SE NW NW 33-21s-34w, was backing up from 4900 feet to 2565 feet to test a show which recovered 500,000 cubic feet of gas on drill stem. Mississippi lime was topped at 4703 feet and reported a slight oil show. The wildcat is about 2 miles west of the Nunn pool.

Pawnee County: Stanolind Oil & Gas Company's Benson 1, NW NE NW 30-23s-15w, 19 miles southeast of the Pawnee Rock pool, recovered 300 feet of oil and 60 feet of drilling mud on a drill stem test of Lansing lime at 3682-3722 feet. Shows and porosity were also reported at 3690-98 and 3708-10 feet. Well was drilling below 3723 feet.

Missouri

Claude McQueen abandoned Meyers 1, SE NE SW 13-63n-41w, wildcat near Milton, Atchison County, in the Northwest Missouri area of the Forest City Basin. The hole was drilled to 1550 feet with no shows reported.

Platte County: Fell & Reid's Klam 1, SE SE SE 19-51n-33w, wildcat northeast of Parkville, was plugging back to test the Mississippi lime, topped at 957 feet. The hole went to 1750 feet in the Arbuckle with a show of dead oil reported at 1072 feet.

Vernon County: A. W. Weymire et al's Stubblefield 1, NW SE SW 21-37n-32w, wildcat east of Stotesbury, was temporarily abandoned at 1850 feet.

Nebraska

Fuerst Oil & Development Company continues testing at Dorsch 1, NW NW SW 6-20n-54w, Scotts Bluff County. Casing was perforated with 53 shots at 5082-5100 feet. After first perforations with 18 shots the well showed a scum of oil and after the 53 shots it filled with 2000 feet of water, drill mud and a slight oil show. Water was exhausted by swabbing.

TOP EFFICIENCY IN
MUD RECONDITIONING

THE Thompson SHALE SEPARATOR AND SAMPLE MACHINE

The top flight performance of Thompson Shale Separators has been proved over a period of many years. You don't take a chance with them. You know from the start that they will do a thorough mud reconditioning job—and provide accurate sample of cuttings.

THOMPSON TOOL CO.
IOWA PARK, TEXAS

KEEPS DRILLING MUD CLEAN — PROVIDES TRUE SAMPLES OF CUTTINGS

☆ New Mexico

Lea County Semi-Wildcat Has Highest Granite Top

Granite reached by semi-wildcat between the Drinkard and Paddock areas, Lea County, new Permian zone in Drinkard field yields big gas flow with oil, while southwest extension pending; record-depth test for state halts at 12,977 feet.

Lea County: Neville G. Penrose et al's Hinton 3, C SE SW 12-22s-37e, intermediate test for the Paddock and Drinkard areas, recorded the highest granite top in the county in entering igneous rock at 7385 feet with elevation at 3345 feet. Pipe was set near the 7000-foot level to perforate opposite gas flow at 5443-5500 feet, while oil production is likely from the Glorietta (Holt) lime at 5185-5250 feet. Humble Oil & Refining Com-

● When the time comes to pierce the earth 4 miles in search of "pay"—it's a comfort to know that Link-Belt has chain brawny enough, tough enough, efficient enough to do the job.

It is a comfort to know that, since chain was first used in the oil industry, Link-Belt engineers have never ceased matching chain design and construction to the ever-changing needs and techniques of drilling. As your new drilling problems arise—you will find Link-Belt research has anticipated them.

Silverlink roller chain illustrated, is built to manufacturers' (A.S.A.) standard sizes in single and multiple widths to meet all requirements.

LINK-BELT COMPANY
Indianapolis 6, Dallas 1, Houston 2, Los Angeles 33,
Kansas City 6, Mo., New York 7, Toronto 8.

9964

LINK-BELT CHAINS
FOR EVERY OIL INDUSTRY SERVICE

pany's Penrose 1, southeast offset with indicated production in the same zone, was drilling at 6050 feet on a 6500-foot depth contract.

Gulf Oil Corporation's Pike 1, C NW NE 6-23s-38e, 1½ miles southwest of its prolific Wichita-Albany lime discovery at 6925-7000 feet, was swabbing some oil while unloading after using 2000 gallons of acid at 6922-7105 feet.

The Texas Company's Blinebry 1, northeast offset to the Drinkard field's Yeso zone discovery and a failure in this horizon, confirmed new pay discovery in testing 79 barrels of oil, averaging 15 percent bottom sediment and acid residue, on 12-hour test through casing, with gas volume rated at 11,700,000 feet daily. Production is from Upper Clear Fork perforations at 5580-5625 feet after using 11,750 gallons of acid. Granite was entered at 7435 feet, and the hole plugged back to 5630 feet.

Humble's Leonard-Federal 2, ⅔ mile southeast of its Dublin pool Ellenburger discovery, was drilling lime at 9520 feet, having entered the Mississippian at 9200 feet, or 528 feet low.

Penrose et al's Federal-Penrose 1, Ellenburger project for the Penrose field, was drilling lime at 7905 feet in Simpson, topped at 7205 feet with McKee sand at 7640 feet. It occupies the highest structural position in Lea County.

The Texas Company's Eaves 1, 11 miles northeast of Hobbs field, was drilling lime at 8990 feet, having logged a nominal oil stain and odor at 8894 feet. Stanolind Oil and Gas Company's Jones 1, 3¼ miles south of the Hobbs field, was drilling at 10,510 feet in Simpson, topped at 10,000 feet.

Phillips Petroleum Company's State-Lea-Mex 4, Ellenburger project for the Maljamar area, was installing a new and taller derrick while bottomed in unidentified formation at 12,977 feet. This record depth test for the state is due to continue to the 14,000-foot level or water in the Ellenburger.

Announcing..

that KING OIL TOOLS have moved into their new plant at 210 Terminal Street Houston 10, Texas

The new phone is Woodcrest 6-8013

We are now prepared better than ever to render good service in a reasonable length of time.

New equipment insures prompt delivery of King GA Series Swivels and King 4C circulating Heads as well as King 3AR and 4AR Wire Line Strippers.

These tools have been in use in the oil field for several years and have given satisfaction wherever used.

King Oil Tools also manufacture swivels for jetting shot holes, Seismograph drilling rigs, small water wells and Core drilling rigs.

Patented

Inquiries solicited. Place orders through supply stores.

KING OIL TOOLS

210 TERMINAL STREET PHONE W. 6-8013

HOUSTON 10, TEXAS

☆ West Texas

Andrews County Wildcat To Complete in Ellenburger

Ellenburger will be the choice of 4 oil zones in completing Andrews County wildcat; Yoakum County adds pumping discovery; TXL field's second Ellenburger well and extension registers big flow without tapping most effective pay.

Andrews County: Shell Oil Company and The Texas Company's Ratliff-Bedford 1, 5 miles west by north of Devonian production, has logged 73 feet of high-gravity oil pay in coring to 11,091 feet and may have an additional 100 feet of this section before entering granite. Having previously confirmed oil production in the 7800-foot Permian, 8800-9100-foot Devonian and the 9700-foot Silurian, this wildcat materially enhanced its importance by testing 4250 feet of 43.3-gravity sweet crude at 11,019-11,042 feet in Ellenburger, topped at 11,018 feet, or 146 feet high to a 12,322-foot failure 2½ miles southeast. Drill-stem test No. 22 at 11,046-11,063 feet returned gas to surface within 8 minutes, with maximum flow of 200,000 cubic feet daily rate, and recovered 8350 feet of clean oil. Bottom-hole pressure was calculated at 5800 pounds. The gas volume is considered subnormal, eliminating possibility of a gas-cap condition as prevails in the Keystone field, which is the only field in the Permian basin that has as many pays below the regular Permian. Later drill-stem test of Ratliff-Bedford 1 at 11,071-11,091 feet failed, and retest was pending. It is carrying open hole below the 9-inch seat at 4263 feet.

Magnolia Petroleum Company and Humble Oil & Refining Company's Cowden 1, C NW SE PSL 7, Block A-55, 8¼ miles west by south of the 4-pay discovery and ⅝ mile north by east of an 8012-foot failure, was drilling dry lime at 7430 feet, having entered the Clear Fork at 5520 feet and Fullerton, or Tubb sand at 6100 feet with elevation of 3135 feet. It is considerably higher than the nearby failure, which logged 2 gas and 2 oil zones below 7500 feet.

Yoakum County: Dunigan Bros. and F. T. Brahaney's Hodges 1, C NW NW Sect. 446 and 5½ miles north by west of the West 1-well pool in the same horizon, pumped 42 barrels of 32-gravity oil initial after using 1500 gallons of acid at 5200-5301 feet in San Andres, topped at 4530 feet with elevation of 3704 feet. This wildcat was drilled to 7717 feet by Skelly Oil Company, then assigned to the above partnership, who held the drilling contract, after it indicated a small pumper.

Ector County: Phillips Petroleum Company's T. P. Land Trust 1-A, 2¾ miles southeast of the TXL field's Ellenburger discovery, flowed 1560 barrels of 39.6-gravity oil natural, with gas-oil ratio of 1558/1, through ½-inch choke

Murray Rubber

helps make O-C-T
BLOWOUT PREVENTERS AND CASING HEADS
outstanding products of the industry

O-C-T Blowout Preventer with stripper packoff.

Christmas tree rubber compo- molded by Murray.

Because efficiency and dependability of high pressure control equipment is no greater than its components, special attention is given to designing and compounding the oil resistant synthetic rubber seal rings and pack-offs for O-C-T Casing Heads and Blowout Preventers.

Specializing in the manufacture of molded rubber products, Murray Rubber Company has developed numerous improvements in mechanical rubber goods for oil industry equipment which help increase performance efficiency; prolong trouble-free life, and materially reduce service and maintenance requirements.

Our experience and production facilities are ready to help you improve the mechanical rubber components in your products. Our recently completed tool and die division substantially increases our service to manufacturers of oil field equipment.

MURRAY Rubber Co.

"Manufacturers of Mechanical Rubber Goods for the Oil Industry"

HOUSTON TEXAS

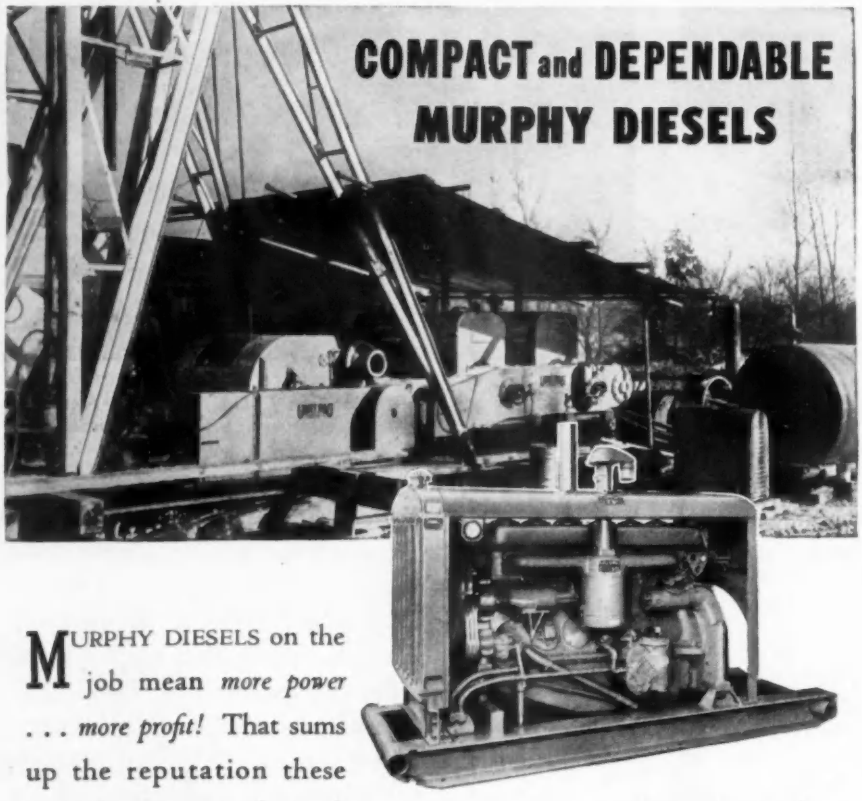
from perforations at 9680-90 and 9775-95 feet in Ellenburger, topped at 9610 feet, or 43 feet high. The water table was reached in drilling to 9853 feet. Production is from only 30 feet of perforations, although the well indicated in excess of 200 feet of effective pay. Information on the trend of production to the southeast will develop this coming week. Sinclair Prairie Oil Company's Williamson 1, 2⅜ miles north by west of the Ellenburger discovery, was drilling at 8415 feet, with the Silurian, a prospective oil zone, due within the next 100 feet.

Gaines County: Shell Oil Company's Cox 1, ⅓ mile northeast of a recent major east extension given the Russell field, was drilling at 7450 feet after showing for one of the best wells. This outpost flowed 493 barrels of oil on 18½-hour test through ½-inch choke after using 5000 gallons of acid at 7290-7430 feet in Clear Fork, topped at 5948 feet with elevation of 3538 feet. Sinclair Prairie's Northrup-Lindsey 1, 1½ miles southeast outpost, missed the lower pay, and was drilling lime at 7975 feet.

Cochran County: Stanolind's Edwards 1, discovery near Yoakum County line that has been in process of completion for several weeks, flowed 130 barrels of oil and 14 barrels of bottom sediment and acid residue by head on a 12-hour test after using 2500 gallons of acid at 5025-80 feet. Bottom-hole water was reached in drilling to 5111 feet. This strike may be above the average for San Andres lime in the general area, since the well flowed after a single acid treatment.

Irion County: Shell Oil Company's Tankersley 2, Pennsylvanian strike, swabbed and flowed 178 barrels of 45-gravity oil and 49 barrels of water on an 8-hour test to cleanup the hole after using 720 gallons of acid through perforations at 7195-7200 feet. This wildcat drilled to Cambrian sand at 8364-8409 feet.

Hockley County: The Texas Company's Coble 1-B, 1⅜ miles west of production in the Levelland field, was plugging back from water at 4866-70 feet after logging the regular San Andres broken pay zone, topped at 4794 feet, or about level with nearest pumper. This well gives the field a width of 3½ miles, and the company's Butler 1 is completing as a ¾-mile northwest extension pumper on the east side of the area. There are no failures.



Two heavy-duty Model ME-66, 6x6½", 6 cyl., 150 HP MURPHY DIESELS in action on a Unit Rig drilling operation.

MURPHY DIESELS on the job mean *more power . . . more profit!* That sums up the reputation these rugged, compact, dependable engines have won in oil-field service. They pack the power-punch that licks the toughest oil-field problems. Their compactness and relatively light weight makes them conveniently portable. They stand up under punishing oil-field duty longer . . . more economically . . . with minimum maintenance.

MURPHY DIESEL CO.
5313 West Burnham Street
Milwaukee 14, Wisconsin
TULSA BRANCH:
416 South Detroit Avenue, Tulsa 3, Okla.

Buy U. S. War Bonds

More Power
MURPHY DIESEL
Reg U.S. Pat. Off.
More Profit

Engines: FROM 90 to 215 HP
Generators: FROM 60 to 115 KW

"FIELD-PROVEN Power"

210-A

☆ North Texas

Wilbarger Has Strike in Ellenburger Dolomite

Wilbarger County has new oil strike in Ellenburger Dolomite; Montague County semi-wildcat may unite Hildreth and Stoneburg areas, thereby paving the way for prompt drilling of possibly 50 wells.

Wilbarger County: National Associated Petroleum Company's Kelly 1, NW NW NW H&TC Ry. 30, Block 13, and 3¼ miles southeast of the Harrold multi-pay fields, flowed 34 barrels of 41-gravity oil hourly through open tubing on 8-hour test after using 2000 gallons of acid at 4910-26 feet in Ellenburger, topped at 4910 feet, or 484 feet high to Ellenburger failure situated 3 miles to northwest. This discovery indicated probable oil production in the Strawn and the Bend.

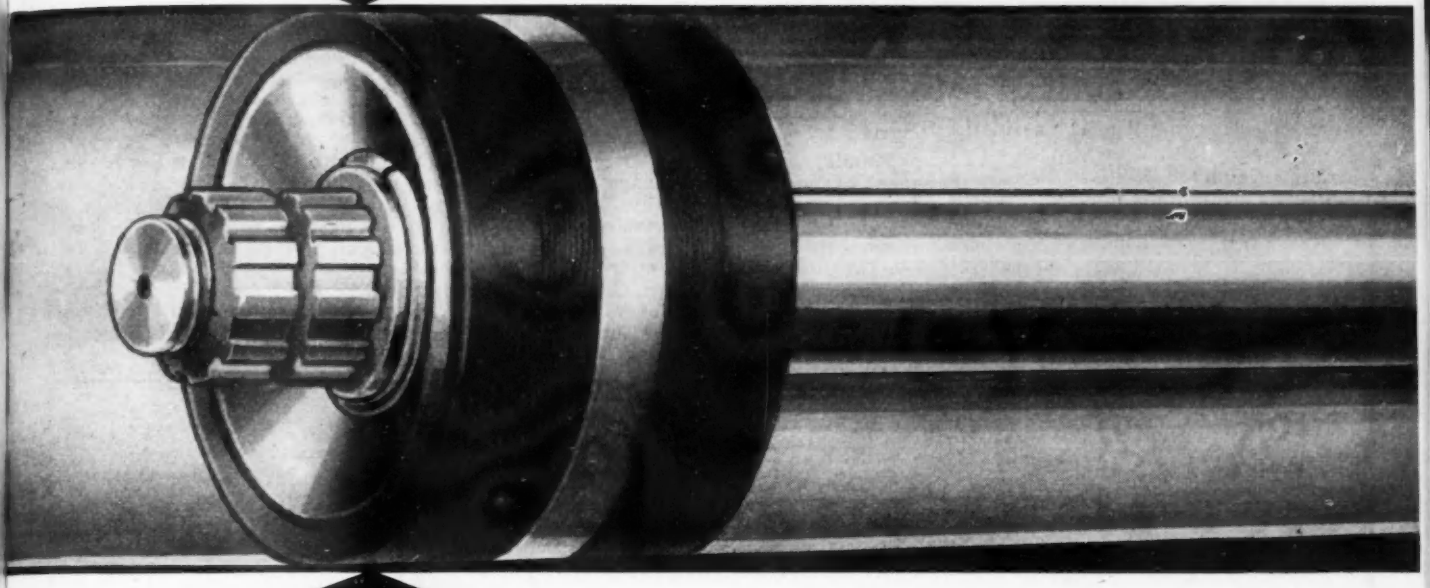
Cooke County: The Texas Company's Bulkeley 1, 2⅛ miles east of the Walnut Bend field, is showing for a small Strawn sand pumper after plugging back from Ellenburger at 7620-7800 feet. This wildcat swabbed 13 barrels of 39-gravity oil and 12 barrels of slightly brackish water on 12-hour test of perforations at 5038-52 feet.

Sun Oil Company's Field 1, 1¼ miles south of the Sivells Bend field, was perforating to complete in the Beasley (Strawn) sand at 6690-6704 feet after plugging back from shale at 7024 feet. Standard Oil Company of Texas owns the bulk of the acreage between this outpost and the discovery area, and is to launch a drilling program.

Montague County: Continental Oil Company and W. B. Omohudro's Johnson 1, NE NE SW Sect. 6, Limestone County School Lands and 2 miles northeast of the Hildreth field, cemented 7-inch casing at 6145 feet in shale to complete through perforations. This outpost flowed oil through tester at 5995-6018 feet in Bend, topped at 5930 feet. It is 1¼ miles north by east of the Stoneburg pool, which is now in line to be united with the larger area. Nu-Enamel Oil Operating Company's Heard 1-E, Wm. Doran Survey, will shorten the interval between the 2 areas to 1¾ miles and advance the Hildreth field to the west, having logged oil saturated conglomerate at 5930-65 feet and possible oil production in lime at 6020-37 feet with water

Mission *Fluid-End* Pistons

You get longer runs between replacements, and less slush pump shut-down time with Mission Fluid End Pistons. That's because advanced design and tougher rubber compound give Mission Piston Rubbers *extra long life.*



Change the RUBBERS and save the PISTON...

Advanced design and tougher rubber compound give Mission Piston Rubbers extra long life

Mission piston rubbers are extremely long wearing and trouble-free—that has been proved by operators in every drilling field. And then, after long uninterrupted service, you renew the piston by installing new rubbers without even removing the piston from the rod. And by doing this, you save the cost of the piston body (about half the cost of the entire piston). Proved long life and low replacement cost enables us to guarantee Mission Pistons to be the most economical on the market to operate.

5A-5

Mission MANUFACTURING CO.

HUMBLE ROAD HOUSTON, TEXAS

Export Office, Room 1636, 30 Rockefeller Plaza, New York 20, N. Y.

below 6155 feet. Top of Bend was called at 5982 feet, correlating 27 feet low to Johnson 1.

Clay County: Gulf Oil Corporation's Spring-Worsham 9, south offset to the most southerly producer in the Spring sector of the Ringgold district, was rated at 1353 barrels of 47.4-gravity oil and 1,416,000 feet of gas natural through 5/16-inch choke from Bend at 5620-37 feet.

☆ East Texas

Freestone County Section Has Shallower Gas Zone

Freestone County deep gas-distillate area has shallower gas zone; confirmation wells considered assured for the LaRue pool, Henderson County, and the South Tyler area, Smith County.

Freestone County: The Texas Company's Sneed 1, 4200 feet south by west of its Fairfield gas-distillate discovery in the Travis Peak, was rated at One million cubic feet of gas daily through 12/64-inch choke from Woodbine perforations at 4198-4207 feet. This new pay discovery was plugged back after testing 500,000 cubic feet of gas in the Travis Peak.

Smith County: Phillips Petroleum Company's Hairston-Johnson 1, north offset to its South Tyler field discovery at 9918-29 feet, was drilling at 9920 feet after logging oil saturation in several zones in the Rodessa Section.

Henderson County: Lone Star Producing Company's Murchison-Wofford 1, J. Tidwell Survey and a northwest offset to its LaRue pool discovery in Bacon lime at 8198-8208 feet, was pulling core below 8328 feet, then will run electric logging survey. This confirmation well is credited with being slightly higher, and showed considerable "kick" in the Bacon zone, assuring a producer.

Leon County: Shell Oil Company and Lone Star Producing Company's Tandy 1, first deep exploration for the Buffalo field's Woodbine gas area, was drilling at 10,360 feet in Travis Peak, topped at 10,084 feet with elevation of 391 feet. It is slated to 10,800 feet for a thorough test of the Travis Peak.

Cherokee County: Humble Oil & Refining Company's Maness 1, Circle prospect, was drilling shaley-lime at 8625 feet after testing 3058 feet of salt water at 8125-44 feet. A previous test at 7850-75 feet in the Rodessa also yielded salt water, but showed sufficient gas to maintain interest in the area.

Wood County: Bobby Manziel et al's Shamburger 1, J. Stark Survey, extended the Merigale pool 2/3 mile southwest with natural flow of 320 barrels of 30-gravity oil through ¼-inch choke from broken Sub-Clarksville sand at 4803-4942 feet. Rig has been skidded southwest to drill Shamburger 1-A, J. M. Rodgers Survey.

Panola County: With the abandonment of Shelly Oil Company's Thompkins 1, Chris Barbee Survey 740, production limits to the northwest of the Carthage field are more definitely defined. Top of lime was picked up at 6516 feet. Total depth was 7189 feet. A drill-stem test of 1 hour and 40 minutes recovered some gas with maximum shut-in pressure of 41 pounds and 25 feet of drilling mud.

Another big gasser for the Carthage field was completed by the Chicago Corporation's Ross-Pirkle 1, A. Moorman Survey, flowing 124,800,000 cubic feet of gas per day through perforations from the Upper Pettit at 5800-26 feet. Rock pressure was 2640 pounds at total depth of 6198 feet. The well also showed an initial flow of 86 million cubic feet of gas per day from Lower Pettit perforations at 5944-6014 and 6036-56 feet.

☆ Southwest Texas

Bruni Townsite Scene of New Drilling Campaign

Bruni Townsite gets new drilling campaign; Webb County wildcat staked; Ross field outpost oiler is completed; 4 tests staked in Ezzell field by Davenport.

Webb County: Rapid development of a new sand discovered in the Bruni Townsite sector of the Bruni field is seen with Tom Graham and Lucey Petroleum Company making locations for 3 new tests. They are the A. M. Bruni 1-M, Tom Graham 1, and Josefina Vela de Pena 1.

The operators' Cole Petroleum Company 1, which opened the new sand, flowed 102 barrels of 37.8-gravity oil daily through 9/64-inch and 5/32-inch chokes from perforations at 2807-12 feet. Tubing pressure was 40 pounds and casing pressure 660 pounds.

About 9 miles south of Bruni, Sid Katz of San Antonio has staked location

Dan Payne's

LOUISIANA OIL REPORTING SERVICE

533 Canal Building

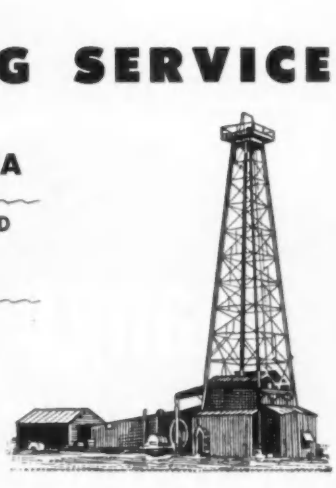
NEW ORLEANS (12) LOUISIANA

"WITH COMPLETE MISSISSIPPI WILDCAT AND FIELD COVERAGE"

Also: Alabama, Florida and Georgia

Oldest Oil Report Published In Louisiana

☆



RELIABLE,

UP-TO-THE-MINUTE OIL REPORTING

ACCURATE AND CONCISE

LOUISIANA-MISSISSIPPI DRILLING REPORT

LOUISIANA-MISSISSIPPI LEASING NEWS

SUBSCRIBERS SAY: "THERE'S NEVER A DULL MOMENT"

Write for a Complimentary Copy

DANIEL O. PAYNE
Editor-Publisher

ISSUED TWICE EACH WEEK
$75.00 a Year in Advance

TELEPHONE CA. 1429
Night WA. 9942-J

HOUSTON, TEXAS OFFICE • 2015 SECOND NATIONAL BANK BLDG. • FAIRFAX 2264

W. C. COOLIGE, *Texas-North Louisiana Representative*

for an 1800-foot wildcat test. It is the A. M. Bruni Estate 1 in Survey 118.

Starr County: Final completion has been made at W. D. Kennard of Houston D. R. Semmes 1, semi-wildcat about 5400 feet southeast of the producing limits of the Ross field. The well flowed 72 barrels of 26-gravity oil daily through a ¼-inch choke from perforations at 2399-2420 feet.

Arkansas Fuel Oil Company has staked F. F. Martinez 13 in the North Rincon field.

McMullen County: Dee Davenport has staked 4 tests about 6 miles southwest of the Ezzell field. They are the Annie Graves Dolph 3-A, 4-A, 5-A and 1-C.

In the regular Ezzell field, Harry Ezzell, Agent, has completed the Harry Ezzell 46 for 41 barrels of 19.8-gravity oil daily through a ¾-inch choke from 1480-90 feet. Location has been staked for Ezzell 47.

Duval County: Humble Oil & Refining Company is preparing to drill a new test in the Gormac field. The company spotted Duval County Ranch Company 3-J in Survey 78 as a north offset to Well 2-J.

☆ Lower Texas Coast

Willacy Given New Field; DeWitt Gasser Completed

New oil field opened in Willacy County; Pure completes DeWitt County wildcat gasser; Lavaca County well opens gas-condensate pool; Willmann field grows.

Willacy County: A new oil field apparently has been established in the La Sal Vieja area, 3 miles southwest of Raymondville, at Magnolia Petroleum Company and J. S. Abercrombie Company's H. H. Dohe 1. After failing on tests in lower sands, operators perforated casing at 10,004-030 feet and on a 1½-hour drill-stem test the well flowed at the rate of 100 barrels daily through a ¼-inch choke. Working pressure was 2150 pounds and gas-oil ratio 31,000-1. These perforations were squeezed and tests were made at 9089-9101 and 8619-31 feet which showed oil and some salt water. The last set of perforations were made at 8500-20 and 8530-45 feet and the well is reported making oil. Further testing will be made before final completion.

DeWitt County: The Pure Oil Company has made final completion at its Eugene Rice 1, James May Survey, to open a gas-condensate pool 2½ miles south of Yoakum. Perforated at 8160-90 feet, the well made an estimated 84 million cubic feet of gas daily, open flow. On a test through a ⅛-inch choke the well flowed 26 barrels of 52.2-gravity condensate daily with a tubing pressure of 2610 pounds and casing pressure 2790 pounds. The well now is shut in.

Lavaca County: McMurrey Refining Company's Ed Kolar 1, in the Vienna area, 9 miles southwest of Sheridan, has been finaled as a gas-condensate producer. On open flow the well is estimated good for 27 million cubic feet of gas daily. The well is reported making some water. Perforations were made at 8450-75 and 8505-15 feet.

San Patricio County: Bridwell Oil Company of Delaware has located a 4000-foot wildcat test 7 miles west of Karnes City. The test is the E. N. Hysaw 1 in the Don Erasmo Seguin Survey.

☆ Upper Texas Coast

Two Wildcat Discoveries Are Made in Harris County

Two wildcat strikes made in Harris County; Wilcox test watched in San Jacinto County; new sand opened in Chesterville field; Altair wildcat is testing; Cockfield sand discovery well near Willis is shut in.

Harris County: Regarded as one of the major strikes of the year on the Upper Texas Coast, Magnolia Petroleum Company's Warren Ranch 2, on the southwest flank of the old Hockley salt dome, flowed 207 barrels of 32-gravity oil daily through an 11/64-inch choke on official potential gauge. Tubing pressure was 575 pounds with the gas-oil ratio being 406 to 1. The well is flowing from open hole at 6356-66 feet. Apparently identifying a second cap, the well is reported flowing from limestone.

Another Harris County discovery is Lenoir M. Josey's Josey, Inc., 1-A, Cypress area, about 2 miles north of the Joyce Richardson field. Drilled to 7572 feet, operator set 5½-inch casing at 7385 feet. Perforations were made at 6955-65 feet and on open flow the well flowed 40 million cubic feet of gas daily. Shut in pressure was 2650 pounds and flowing

Strong, Healthy Help!

To equip a well with a JENSEN Pumping Unit is like putting a good man in charge of a crew. Everything picks up. Everything goes right.

JENSEN equipped wells are likely to be more profitable and satisfactory because we have worked with our customers to that end for more than 25 years.

If you want strong, healthy, experienced help with your wells, get JENSEN Pumping Units. They cut costs and minimize trouble from coast to coast and Gulf to Great Lakes.

Check up for yourself. Ask JENSEN owners. See your JENSEN dealer. Consult Composite Catalog pages 1473-6.

JENSEN BROTHERS MANUFACTURING CO.

. . . Coffeyville, Kansas, U. S. A. . . .

EXPORT OFFICE: 50 CHURCH STREET, NEW YORK CITY

pressure 1950 pounds. Operator reports the condensate recovery is about 25 barrels of 1 million cubic feet of gas.

San Jacinto County: Interest now is focused on Brewster-Bartle Drilling Company's Olive J. Park 1, Wilcox sand wildcat test 6 miles north of Cleveland. The test is coring for the Wilcox sand around 8500 feet. A slight oil show was reported in the Cockfield.

Colorado County: Stanolind Oil & Gas Company's E. A. Wiese 1, second test for the Chesterville field and ¾ mile southeast of Magnolia's Anderson 1 discovery well, has been completed in a shallow sand through perforations at 6058-70 feet. In 24 hours the well flowed 26 barrels of 51.5-gravity distillate through a 5/64-inch choke with a gas-oil ratio of 74,675-1. Tubing pressure was 1990 pounds and casing pressure 2160 pounds. The Anderson 1 had sand in the Wilcox at 9500 feet and in the Yegua at 6800 feet. Stanolind's Wiese 1 failed in tests in the Wilcox.

The Superior Oil Company of California's Matilda Tait 2-A, 1250 feet southeast of a dry hole and ½ mile northwest of Altair, drilled to 9286 feet and set 7-inch casing at 8424 feet. Perforated at 8256-80 feet, the well tested salt water and a small amount of gas. Operator has squeezed perforations and will retest.

Matagorda County: Stanolind's Elizabeth L. Barth 1, about ½ mile northeast of Skelly-Stanolind & Tide Water Associated Oil Company's Hardy & Horn 1 gas discovery well, bottoms at 10,943 feet and is setting casing for completion after recovering some distillate on a 5½-minute drill-stem test at 10,200-207 feet. Bottom hole pressure was 3050 pounds and shut in pressure 4750 pounds.

☆ South Louisiana

Wildcat Activity in Area Declines, Field Work Gains

Wildcat work in South Louisiana declines but field locations gain; Humble sets pipe in Good Hope field test; Calcasieu Parish wildcat abandoned; new Neale field well is completed; Allen Parish Wilcox sand test prepares to spud.

Although wildcat development is below normal, drilling activity in proven fields on the Louisiana side of the Gulf Coast is showing some increase. During the past week 19 locations were staked in 11 parishes, most being spotted in proven pools.

St. Charles Parish: Humble Oil & Refining Company's Sarpy Brothers 3, Sec 7-12s-8e, Good Hope field, bottoms at 8900 feet and 5½-inch casing has been landed at 8467 feet for completion in the regular sands.

The Pure Oil Company's GATX 4, deep test in the same pool, failed to find production in lower sands and has plugged back from a total depth of 11,259 feet to 9329 feet to test in regular sands.

Calcasieu Parish: Union Sulphur Company and Gulf Refining Company's Brannon 1-A, wildcat test in Sec 16-11s-10w, Choupique area, has been abandoned at total depth of 9980 feet.

Beauregard Parish: The Atlantic Refining Company's Musser-Davis Lumber Company 10, Neale field, has been completed for 205 barrels of oil daily through an 11/64-inch choke from perforations at 10,847-884 feet. Tubing pressure was 1500 pounds.

Allen Parish: Humble's J. A. Bel Estate 1-A, Sec 33-52-4w, deep Wilcox sand wildcat test in the Oberlin area, is rigging up to spud.

Iberville Parish: Noble & Baker's W. E. Caldwell 1, Sec 52-9s-2w, wildcat test in the South St. Gabriel area, is drilling below 8925 feet in sand and shale. This is a Marginulina sand wildcat test.

St. Martin Parish: Gulf Refining Company's McGrief Brothers 1, Sec 26-9s-8e, 13,000-foot test in the Bayou Bouillon area, is drilling below 12,230 feet in sandy shale. This will be the deepest test drilled in this sector.

Acadia Parish: Sun Oil Company's A. R. M. Company 1, Sec 39-9s-1w, outpost in the Egan field, is drilling below 7785 feet in sand and shale.

☆ North Louisiana

Wildcat Activity Increases; Two Tests Have Gas Shows

Wildcat activity increasing; Lincoln and Bossier tests have gas shows; Lake St. John field, Delhi field vie in record number of locations.

Lincoln Parish: The California Company ran a drill-stem test in M. H. Nobles 1, 12-19n-4w, wildcat in the Hico area. The test, made at approximately 6903 feet, recovered salt water and a showing of gas. Drilling continues below 7185 feet, and is scheduled to 10,500 feet.

The company also is drilling below 8455 feet in W. W. Norris 1, 13-18n-1w, second test in the Tremont field.

West Carroll Parish: California's Hodge-Hunt Lumber Company 1, C SW NW 6-19n-9e, has plugged back to 6700 feet from 7039 feet to run a drill-stem test of the Smackover lime and ascertain production possibilities, but has not yet cemented casing for test.

Tensas Parish: Shamrock Oil & Gas Company's Panola County 1, deep wildcat, 34-13n-12e, is drilling below 9143 feet in shale, without showings of oil or gas so far.

California has obtained permit for J. M. Lee et al 3, 46-9n-10e, 9400-foot test in the Lake St. John field. Activity continues steady in both Tensas and Concordia divisions of the field, with 7 wells drilling, 3 testing, and 8 wells now located.

Concordia Parish: Carter has another producer ready to complete in Lake St. John at Carter-Rhodes 1, 30-9n-10e. Total depth is 9112 feet with production string set at 9058 feet. Hole was perforated with 30 shots from 9055-60 feet. With 3/16-inch outlet at surface, during the last 2 hours of an 8-hour test, it flowed at the rate of 1,620,000 cubic feet of gas per day with 94 barrels of water-white condensate.

California-Carter completed L. R. Alwood 1, 11-9n-10e, Lake St. John, with initial production of 150 barrels of distillate per day through ¼-inch choke on tubing. It is producing from the Massive sand through 420 shots from 8985-9055 feet, with total depth of 10,430 feet.

H. C. Owens' Thomas Crichton 1, 1-20n-8w, deep wildcat in the Homer area, set 9⅝-inch casing in the Nacatoch

On Building A Business

We have been building a constituency for thirty-seven years. Not by devious devices, as in politics, but by the forthright method of being as indispensable as possible to as many operators as come our way. It's just a matter of having what's needed when you can, of charging what it's worth, and of being helpful and cheerful about it so the customer will elect to TRY PELCO FIRST: It's slower than politics, but wholesome.

WE'VE SUPPLIED OIL MEN IN OUR AREA FOR 37 YEARS

PELICAN WELL TOOL & SUPPLY CO.

SHREVEPORT LOUISIANA

Berwick
New Iberia
Lake Charles

at 1437 feet, and is drilling below 1920 feet in shale and lime.

Blackwell Oil & Gas Company-Grady Vaughn recorded 480 barrels of 41.3-gravity oil during a 24-hour drill-stem test at Waller-Beene 1-A, C NW SE 10-23n-7w, newest Cotton Valley producer in the Haynesville field. Production is through 120 perforations at 7980-8004 feet, a sand higher up in the Cotton Valley than found in the discovery. Total depth is 9154 feet.

Five other Cotton Valley tests are drilling in the field.

Richland Parish: Todd & Holcomb, J. M. Forgotson, et al were clearing location for a proposed Paluxy wildcat, Greer Estate 1, C NE SW 13-16n-7e, which is located both on a geological and geophysical high, 8 miles from the Delhi field.

Red River Parish: Carter abandoned W. Colbert 1, C NE SE 16-13n-9w, deep wildcat on a geophysical high, but is rumored to be planning another test in this sector. The well tested at the rate of 20,000 cubic feet of gas per day after 43 perforations were made from 5098-5110 feet. Total depth was 7400 feet, with string of 5½-inch casing cemented at 6585 feet.

Madison Parish: V. S. Parham's Kathan & Johnson 1, 35-18n-10e, after drilling to total depth of 4005 feet in shale, topped at 3690 feet, has shut down for orders. The well may be carried deeper to the Glen Rose. No showings of oil or gas have been encountered.

Bossier Parish: Barnsdall Oil Company-Sohio Petroleum Company's Welori Lumber Company 1, C SE NW 20-20n-12w, southeast of the Benton field gas-distillate discovery, was perforated with 48 shots from 8384-96 feet in the Cotton Valley, set tubing with packer at 8350 feet and was reported swabbing salt water with no shows of oil or distillate, and an unestimated amount of gas. Previous perforations at 8094-8102 and 8222-31 feet failed to show commercial production.

Webster Parish: The Ohio Oil Company et al cemented 5½-inch casing at 8655 feet in Webster Investment Corporation 1, C SE SW 6-21n-9w, in the Cotton Valley field, and were preparing to test at total depth of 8660 feet.

☆ Arkansas

Stephens Field Continues As Most Active Sector

Stephens field continues as most active sector; several wildcats on location or shut down, 1 actively drilling.

Columbia County: Thirteen wells are waiting on cement preparatory to testing or are at the testing stage in the shallow Stephens field, which also extends into Nevada and Ouachita counties, with 3 wells drilling and 11 locations staked. R. H. Crow, Trustee, added one producer and a dry hole to the field record.

Placid Oil Company is beginning operations on G. T. Williams 1, C N½ NE 24-18s-22w, a scheduled Smackover test in the Dorcheat-Macedonia field, which has 2 inactive locations.

Hassie Hunt, Trustee, et al completed Pittman-Sanders 1, C SW NE 17-18s-19w, in the West Atlanta field. Initial production was 154 barrels of oil per day through 9/64-inch choke on tubing, with flowing tubing pressure of 2025 pounds, and a gas-oil ratio of 1326-1. Production is from Smackover lime through 24 perforations at 8267-71 feet, which was topped at 8235 feet, with first porosity encountered at 8242 feet. Total depth of hole is 8272 feet with 5½-inch cemented on bottom.

Midstates Oil Company's G. W. Taylor 1, 4-20s-20w, in the Haynesville field, was written off as a failure. It was drilled to 5588 feet with 5½-inch casing cemented at 5586 feet. Two porous zones in the Pettit were perforated and acidized but failed to produce either oil or gas in commercial quantity.

Union County: Marine Oil Company for a second time abandoned L. O. McGough 1, C NE NW 34-17s-13w, an old wildcat about 1 mile north of production in the Urbana field. It was abandoned in February at 6331 feet after perforating from 3564-70 feet and testing salt water with a slight showing of gas. The company resumed work on the well and perforated with 10 shots from 3560-63 and 3580-87 feet and then squeezed. Cement was drilled out to 3577 feet and casing reperforated with 24 shots from 3564-69 feet. Swabbing recovered salt water with slight showing of gas and the well was abandoned.

Kerlyn Oil Company-Phillips Petroleum Company are drilling below 2565 feet and will begin coring for sand in Frost Lumber Company 2, C SW SW SW 10-17s-13w, shallow Wilmington field.

White County: Lion Oil Refining Company's Nalley 1, SE NE 33-8n-7w, wildcat, was drilling at 2095 feet.

ELECTRIC GENERATING PLANTS
Efficient, compact, portable AC and DC Plants from 350 watts to 25 KW. Dependable electric current for lighting and power.
SERIES W 2 C
AC – 2000 and 3000 Watts
DC – 2500 and 3500 Watts
OIL FIELD EQUIPMENT
CMC equipment is engineered especially for portability and rugged service needed in oil field work. The CMC ELECTRIC GENERATOR LINE is built by men who pioneered the field in producing portable AC and DC Electric Generating Sets. NEW CMC PUMPS offer advanced improvements and exclusive features that set a new HIGH in Pump performance.
PUMPS
All sizes from 1½" to 10". Popular CMC 10M-OF Dual Prime Centrifugal shown above. Also Diaphragms and High Pressure Models.
ARMY E NAVY
OIL EQUIPMENT DIVISION
CONSTRUCTION MACHINERY COMPANY
WATERLOO, IOWA

for . . .

PERMANENT

Installations

specify

ROBINSON

LIMIT PLUGS

The superiority of Robinson products is reflected in our LIMIT PLUG—built with ample water courses to withstand high pressures—and constructed to accommodate large expansions . . . plus these features:

- Cypress wood construction
- Cast-iron guide weight
- Uniform pressure packs and solidifies sidewall

ROBINSON PACKER CO.

P. O. Box 1408

TULSA, OKLAHOMA

Factory: Coffeyville, Kansas

☆ Mississippi

Jefferson County Prospect Runs Casing After Testing

Humble's prospect in Jefferson County runs casing after testing shows below 9680 feet; attempted Baxterville extension in Marion County testing Tuscaloosa horizon; Tinsley field's deep prospect reports shows in Smackover.

Jefferson County: Humble Oil & Refining Company's M. R. Smith 1, SEc 12-9n-1e, the only wildcat in Mississippi which has indicated promise of commercial production during the last 2 months, was waiting on cement after running 7-inch casing to 10,675 feet. Last core reports indicated sand and shale in the interval between 9722-9932 feet. Previously a gas-condensate sand had been developed at 9680-9722 feet, but the extent of its importance was not given.

Marion County: The Texas Company's L. V. Ladner 1, SEc NE 12-1n-17w, which is undertaking to extend production ½ mile west in the Baxterville field from Lamar into Marion County, has encountered good porosity with good shows of gas and condensate from sands in the 7800-foot zone. Cores at 7843-46 feet had good odor and a second core at 7846-59 feet had a show of oil. Electrical log has been run to 8271 feet in the Tuscaloosa horizon and the well is now drilling below 8450 feet.

In the reactivated Hub field Humble's A. E. Ball 1, NWc 20-2n-14e, recovered water cushion and 1700 feet of salt water in a 90-minute drill-stem test at 5740-62 feet. Well is drilling below 5850 feet with no shows reported. The California Company's W. E. Walker 1, SEc 10-2n-18w in the Hub field, is drilling at 8480 feet in the Tuscaloosa zone with no shows reported.

Adams County: Two successful completions marked the week for the Cranfield pool. California's National Gasoline Company of Louisiana 8, 53-7n-1w, which was drilled by the Wheless Drilling Company, was brought in with an initial flow of 283 barrels per day. Production is from 186 perforations opposite the Massive sand at 10,404-35 feet. California's L. G. Ratcliffe 1, 52-7n-1w, also was completed with an initial production of 113 barrels of oil per day. Gravity of oil is 39.2 and gas-oil ratio is 180-1. The Cranfield has been showing an unusual amount of activity recently. California is on location or is rigging up on 7 wells and is drilling 5 others.

Claiborne County: The county's only 2 prospects closed down as The Pure Oil Company's A. L. Chapman 1, 13-11n-3e was abandoned in the Comanche horizon at 10,128 feet with no shows reported at any point along the hole; and Sun Oil Company's B. D. Segrest 1, C SE NE 7-10n-5e, was abandoned in salt at 3554 feet. The well had been cored continuously with little or no porosity revealed from cores taken all along the line. Salt was topped at 3547 feet.

Yazoo County: Union Producing Company's Jennie Stevens 21, NWc 12-10n-3w, deep test in the Tinsley field, has reached 11,110 feet after topping Smackover lime at 10,842 feet. Cores from 10,836-56 feet revealed strata of red and black shale along with streaks of gray dolomitic lime having indications of oil. A drill-stem test at 10,864-77 feet recovered only mud and water cushion, but another core-test at 10,879-93 feet recovered several inches of crystalline lime with show of oil.

Jasper County: Southport Petroleum Company's C. C. McDonald 1, SWc NE NW 35-1n-12e in the West Heidelberg field continued to test below 6600 feet after encountering a new producing zone for the field in the Eutaw at 5350 feet. Latest cores taken at 6500 and 6600 feet have had irregular stains from sands with good porosity. Gulf Refining Company's S. H. McDonald 1, SWc 5-10n-10w in West Heidelberg, is drilling below 7002 feet in gray shale with no shows reported.

Wayne County: Gulf's G. S. Stanley 25, NEc SE 3-9n-9w, in the Eucutta field, swabbed at the rate of 150 barrels per day from perforations opposite the Eutaw horizon at 5293-99 feet. Gravity of oil was 27.7. Lyons & Prentiss' T. F. Reynolds 4, NEc SW NW 18-9n-8w, Eucutta pool, recovered 700 feet of heavy oil and 1800 feet of salt water from a test in the Eutaw. The well is attempting to squeeze out salt water and will be worked over before bringing to completion. Sun's Mrs. Adie Finley 3, SWc 7-9n-8w, Eucutta field, was installing pump after a swab job from perforations at 5128-38 feet and 5190-5220 feet. A drill-stem test had recovered 360 feet of oil and oil-cut mud in 20 minutes from the productive Eutaw. Gulf's N. Davis 1, SWc 11-9n-9w, is drilling below 6526 feet in sandy shale with no shows reported.

Tate County: C. Porter Johnson's B. F. Pritchard Estate 1, NEc NW 28-4s-7w, has had shows of oil and gas from a test at 2825-34 feet opposite the Eutaw. Cores from 2894-99 feet in the same section recovered only sand and shale with no shows. The well is drilling below 3025 feet.

Alabama

Hunt Oil Company's Maggie Utsey 3, NWc 33-11n-4w, in the Gilbertown field, Choctaw County, is waiting on gauge after running tubing and rods for pump. Total depth is 3491 feet. Hunt's Boney-Scruggs 1, C SW NE 32-11n-4w, in the Gilbertown area, is drilling below 2730 feet with no shows reported.

Washington County: Wayne Refining Company's Willie Mitchell 1, SEc NW NE 12-8n-3w, was still fishing for equipment after reaching 4432 feet. Oil shows were reported in the 2000-foot zone but cores taken subsequently recovered no shows.

The county's only other prospect, J. T. Parks' S. A. Hobson 1, C SW NE 9-8n-2w, remains shut down after reaching a depth of 3185 feet.

Clarke County: The California Company's Scotch Lumber Company 1, C NE SW 25-10n-1w, is drilling below 3260 feet. Top of chalk was logged at 2407 feet.

Wilcox County: Southern Natural Gas Company's W. Morgan, Jr. Estate 1, C SE SE SW 32-12n-5e, has derrick up.

Florida

Humble Oil & Refining Company's Gulf Coast Realty Company 4, 20-48s-30e, in the Sunniland field, Collier County, has been completed with an initial production of 257 barrels of 19.2-gravity oil per day, and 161 barrels of salt water. The well is on pump. Pro-

duction has materially increased in latest tests, but the salt water content remains about the same—36 percent. Production is through open hole from the lime section at 11,560-67 feet, total depth.

Humble's newest test in the field, Gulf Coast Realties 7, 17-48s-30e, set pipe at 997 feet and is drilling below 1996 feet in chalk, lime and shell.

Highlands County: Humble's G. C. Carleton Estate 1, C SW NE 34-38s-29e, recovered only mud and water from a 40-minute drill-stem test at 9076-87 feet, and is still coring below 9644 feet. Plans are to run electrical log.

Charlotte County: Humble's Lowes-Treadwell 1-A, C SW NE 17-42s-23e, is drilling below 4318 feet in lime and dolomite with no shows reported.

Calhoun County: The Pure Oil Company's St. Andrew Bay Property 1, 2-1s-11w, latest Florida wildcat, is rigging up rotary tools.

Monroe County: O. D. Robinson's State 1, NEc NW 29-59s-40e, is still fishing for tools at 6085 feet.

Meter Group Elects

C. L. Hutchings, Tide Water Associated Oil Company, has been named president of the Southern California Meter Association. Other officers are Lee Cheever, Southern Counties Gas Company, vice president; C. G. Cortelyou, General Petroleum Corporation, treasurer; George H. Forster, Jr., The Texas Company, secretary, and Mark McIlvane, Chanslor Canfield Midway Oil Company, past president.

☆ Rocky Mountain Area

Hulett Creek Wildcat Is Abandoned, New Test Begun

Hulett Creek, Wyoming, wildcat abandoned; test started on adjoining structure; location spotted for Devonian test, Glacier County, Montana.

Hulett Creek: Williams Brothers' Government 1, NW NW SW 15-55n-67w, Hulett Creek, Crook County, Wyoming, was drilled into the Deadwood formation to 3380 feet without encountering production and has been abandoned. Water was logged in the top of the Deadwood at 3345 feet. Top of the Madison was logged at 3345 feet.

Equipment was being moved in for Unit 1 in NW SE NE 12-54n-67w on Poison Creek. Upon completion of Unit 1, Tie Creek in Twp 56 n, R 65 w, and Elkhorn in Twp 55 n, R 66 w, will be tested.

Reagan Structure: After extensive seismic work on the structure, location has been spotted by Union Oil Company of California for its Devonian test of the Reagan structure, Glacier County, Montana, 4 Tribal-194 in NW SE SE 27-37n-7w. Location is approximately ¾ mile southeast of the oil discovery well of the structure drilled by Ed Reagan. The first test of the structure was completed in the Madison for 6 million cubic feet of gas; its second test showed for 85 barrels of oil per day from the Madison; and the third well to the west of the oil discovery was a failure.

☆ Michigan

Rose City Field Extension Pumps from Richfield Zone

Muskegon Development and United Drillers' State C3, NW SE SW 34-24n-2e, mile southeast extension to the Rose City field, Ogemaw County, is pumping 7 to 10 barrels oil from the Richfield zone at 4166 feet.

Isabella County: Wicklund Development Company's Hein 1, SE SE SE 13-14n-6w, wildcat between the Deerfield and Broomfield shallow gas pools, gauged up to 1,250,000 feet of gas and flowed 20 to 35 barrels oil from the Traverse, 3156-65 feet, following the second acid treatment. Naturally it showed 200,000 feet of gas and one barrel of oil.

Proration: The Evart and Rose Lake fields, Osceola County, were removed July 1 from state proration as no longer having wells capable of producing the 150 barrels per well per day allowable. The State Advisory Board reviewed both the Coldwater field in Isabella County and the Deep River field in Arenac but did not make recommendations.

Indian Lands Offered

Sealed bids for oil and gas leases on 16,536.46 acres of restricted Indian lands will be opened at the Kiowa Indian Agency, Anadarko, Oklahoma, at 10 a.m., July 26. Lands are in Caddo, Comanche, Cotton and Stephens counties.

BUILT WITH "GUTS" FOR EXTRA HEAVY DUTY
AMERICAN HEAVY DUTY ROLLER BEARINGS have built into them the vital extra capacity for continuous 24-hour-a-day performance under the most gruelling service conditions possible. Brutally strong . . . simply constructed . . . precise . . . AMERICANS operate quietly, smoothly, in the heaviest equipment under the most terrific strains and impacts. Longer, safer, lower-cost, trouble-free service is assured when AMERICAN HEAVY DUTY ROLLER BEARINGS are on the job. That's why most major manufacturers and designers of heavy industrial machinery and oil country equipment specify AMERICANS.
In your next heavy-duty installation, ride the load on AMERICANS. Our engineers will welcome your roller bearing problems. Write today.
AMERICAN ROLLER BEARING CO.
Pittsburgh Pennsylvania
Pacific Coast Office:
1718 S. Flower Street Los Angeles, Calif.
HEAVY DUTY
AMERICAN
HEAVY-DUTY
ROLLER BEARINGS

☆ Illinois Basin

Coles County Well May Be Mattoon Pool Extension

Coles County, Illinois, test opens new pool or extends Mattoon pool; new test begun in favorable wildcat territory, Crawford County; Phillips test in Edwards County is pool opener; new area opened in Posey County, Indiana.

Coles County: Howard Gordon and others' Brining 1, NE NW NE 3-11n-7e, has opened a new pool or extended the Mattoon pool 1½ miles southwest with production from Aux Vases sand. After a 40-quart shot the well was swabbing and cleaning out and making 7 barrels of oil per hour from pay at 1942-67 feet. Operators plan to test Cypress sand saturation at 1794-1809 feet through casing and complete the well as a twin producer. Success of the test is expected to produce a flurry of drilling in the area, in which several independent and major operators hold acreage. The Carter Oil Company has offset acreage to the test.

Crawford County: P. T. Sutphin has started drilling Bailey 1, S½ NE NW 2-6n-13w, 4 miles southeast of Oblong in wildcat territory long held favorable for exploration. The well will be drilled with cable tools.

White County: Skelly Oil Company is testing Waltersburg sand at Hicks 1, SW SW SW 6-6s-10e, wildcat which drill-stem tested 540 feet of gas and 60 feet of oil cut mud.

Edwards County: Phillips Petroleum Company's Tait 1, SW SE SW 5-3s-10e, 3½ miles west of production in the south end of the Albion pool, is a pool opener. When casing was perforated for test of McClosky lime at 3247-64 feet, the well filled with 1500 feet of oil in a short time. Testing continues.

Kentucky

Production in the Poole pool, Webster County, has been extended ¾ mile east at Iley Browning's Springer 1, 9-N-23. Operator has set pipe at 2025 feet for a test of Waltersburg saturation at 1825-52 feet and Tar Springs sand at 1904-55 feet. Total depth of hole is 2476 feet.

Union County: Carter continues testing at Weldon 1, 21-P-20, which gave the St. Vincent pool a slight northeast extension and a new pay horizon. The Aux Vases, a new pay zone for the area, showed commercial saturation at 2452-64 feet, and the McClosky line, regular production zone of the area, had pay at 2536-38 and 2550-57 feet.

Indiana

Carter's Cox 1, NW NW SE 14-7s-14w, 1½ miles south of the Mt. Vernon pool, Posey County, pumped 84 barrels of oil in 24 hours from Tar Springs sand to open a new area. Pay was found at 2079-92 feet to give the state its first successful wildcat in several months.

Price Hike Posted

Sinclair Wyoming Oil Company announces an increase of five cents a barrel on its posted price for sweet crude in the Bailey Dome, Crooks Gap and Lost Soldier (other than the Tensleep horizon) pools of Wyoming. The increase is retroactive to June 1. Under the new price schedule oil below 21 gravity is posted at 85 cents per barrel with a 2-cent differential up to $1.25 per barrel for crude of 40 gravity and above.

AIRCRAFT MAINTENANCE SERVICE
***for the* OIL MEN OF AMERICA!**

Owned by the Shell Oil Company, Atlanta, Ga., this Howard DGA-15P is piloted by Julian W. Freeman, in charge of Shell sales and distribution in the Southern states. Southwest Airmotive keeps the ship in first rate flying condition for regular contacts with airlines, engine and aircraft manufacturers, repair stations and airports—all vital to the war effort.

Oiling the sinews of war is a tremendous job, but the petroleum industry is performing miracles in getting it done. To keep production up, oil men are called to the four corners of the country, and they are saving precious hours of time with fast flying, dependable planes. When it comes to keeping those planes in top flying condition, oil men know that Southwest Airmotive is their most dependable source of efficient, *fast* maintenance service. Finely equipped shops, expert craftsmen and years of experience in overhauling every kind of engine and plane have given Southwest Airmotive the skill and means of giving the fastest, most dependable civilian aviation maintenance service in America.

Planes are regularly serviced by Southwest Airmotive

Asiatic Petroleum Co., No. 1 Wall St., New York, N. Y.
Barnsdall Oil Co., Tulsa, Oklahoma
British American Oil Co., Tulsa, Oklahoma
Al Buchanan Drill. Co., Frost Nat. Bank Bldg., San Antonio, Texas
D. Harold Byrd, 1310 Tower Pet. Bldg., Dallas, Texas
Lion Oil Co., El Dorado, Arkansas
Continental Oil Co., Ponca City, Oklahoma
Carter Oil Co., Tulsa, Oklahoma
E. B. Germany & Son, Highland Pk. Shopping Village 25½, Dallas, Texas
Gulf Oil Corporation, Dallas, Texas
Halliburton Oil Well Cementing Co., Duncan, Oklahoma
Humble Oil & Refining Co., Aviation Division, Humble Bldg., Houston, Texas
Noble Drilling Co., Tulsa, Oklahoma
Parker Drilling Co., Tulsa, Oklahoma
Phillips Petroleum Co., Bartlesville, Oklahoma
Premier Oil Ref. Co., Longview, Texas
Seismic Exploration, Inc., Houston, Texas
Shell Oil Co., New York, N. Y.
Shell Pipe Line Corp., Houston, Texas
Socony Vacuum, New York, N. Y.
Superior Oil Co., Oil and Gas Bldg., Houston, Texas
The Texas Co., New York, N. Y.
The Texas Pipe Line Co., Houston, Texas
Warren Petroleum Co., Tulsa, Oklahoma

SOUTHWEST AIRMOTIVE

Southwest Airmotive Co.

COMPLETE AIRLINE TYPE MAINTENANCE
FOR PRIVATE AND COMMERCIAL PLANES
LOVE FIELD • DALLAS, TEXAS

☆ California

Los Angeles Basin Tests Nearing Critical Depths

Deep tests in Los Angeles Basin reaching critical depths; new discovery indicated in wildcat 2 miles south in Antelope Hills field, Kern County; Lost Hills deep test, now in Eocene formation, still fails to show anything of importance.

Los Angeles County: Several deep tests are reaching critical depths, one of which are Standard Oil Company of California's Lewis 1 in the Leffingwell area near Santa Fe Springs, which is credited with a number of showings. Operator is now drilling below 9550 feet in shale streaked with sand but devoid of indications of oil or gas.

Shell Oil Company's 2 deep tests in the Long Beach field are being watched with interest by many operators in this area. Stakemiller-Rose 1 is drilling below 11,639 feet. Alamitos 48-A is approaching 13,000 feet. A protection string has been set at 12,853 feet.

With 6 operating organizations in an area which now looks like a shallow field of perhaps 300 acres, the Costa Mesa field, south of the mouth of Santa

Ana River, now has 7 wells pumping, 2 dry holes, 1 gasser shut in and 1 well rigging up.

Geologically, the area is badly faulted and cross-faulted, making it almost unpredictable. It has 3 productive sands, A, B and C zones, down slightly below 2000 feet. Anything below that is problematical. The 7 pumpers probably will average 100 barrels each per day, some being below and others above that figure.

Imperial County: The Texas Company's wildcat in the sage brush country around Holtville, Grupe-Engrebretson 1, continues to drill and core below 11,636 feet. Amerada Petroleum Corporation's Timken 1 near El Centro has rigged heavier equipment and was preparing to drill from 3120 feet.

Kern County: Williams Bros. have tested their wildcat well, Layman 1, in 12-28s-19e, about 2 miles south of the Antelope Hills field, and the discovery of a new field is indicated. Well bailed at the rate of 200 barrels daily from the interval between 810 and 830 feet in Middle Miocene sand.

Rothschild Oil Company's Porter 2 in 17-30-29, Edison area, has been completed, pumping an unestimated quantity of crude to sump from total depth of 3987 feet.

After a long period of testing, Superior Oil Company has succeeded in bringing in its Houchin 74-34 at Paloma. Well is flowing 250 barrels daily of 32 gravity oil.

Richfield Oil Corporation has work started on 3 new Tejon Ranch wells. Two of the tests are wildcats and the third is a development well in the Tejon pool. The Tejon ranch area is now producing about 470 barrels daily from some 15 wells.

Standard's deep test of the Lost Hills field is again drilling in Eocene formation and has been continuously coring for the last 650 feet. Recoveries to date have been gray sand and shale. Total depth is 10,800 feet. Hopes for production in this well is beginning to fade as the drill goes deeper without showings of interest.

Fresno County: Tide Water Associated Oil Company's wildcat, S. P. 82-15 in 15-17s-15e, Cantua Creek area, has cemented casing at 8856 feet, total depth 10,073 feet. Gas showings have been difficult to control in this well and carefully weighted drilling mud is required. While the venture has not had any oil showings of importance, a gas well may be in prospect.

California Production Again Sets New Record

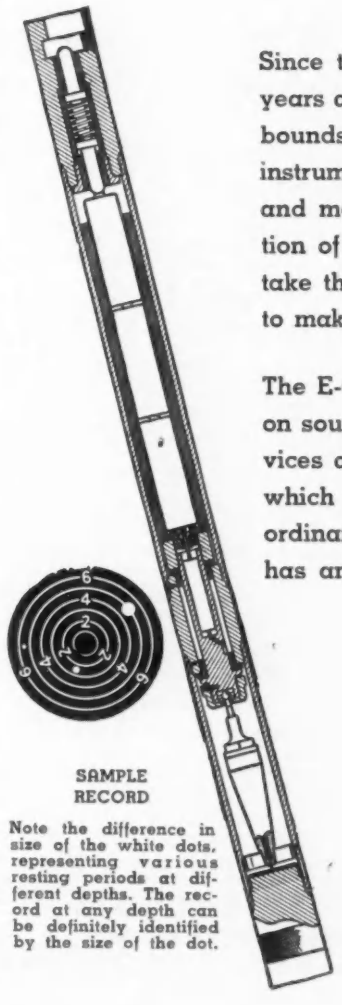
California oil production established its fifth successive high record since May 1 in the ten-day period of June 11-20, according to Conservation Committee figures. Output increased to 949,300 barrels daily during June 11-20, up 2600 barrels daily over the first ten days of the month.

Production during June 1-20 averaged 948,000 barrels daily, a gain of 7300 barrels daily over the same May period. In the first 20 days of June San Joaquin Valley fields produced 8100 barrels daily more than in May; Los Angeles Basin fields showed a gain of 1600 barrels, but the Coastal District fell off 2400 barrels daily.

SPERRY—SUN

E EA-SY C

INCLINOMETER



SAMPLE RECORD

Note the difference in size of the white dots, representing various resting periods at different depths. The record at any depth can be definitely identified by the size of the dot.

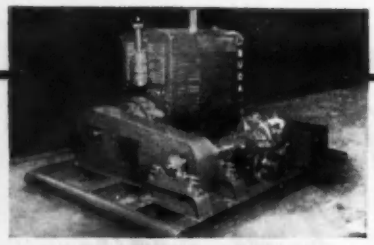
Since the introduction of the E-C Inclinometer two years ago, its use has been increasing by leaps and bounds. Oil drillers have discovered that in this instrument they have found the simplest, speediest and most economical method of tracing the direction of a bore hole. As one driller writes "we can take three records in less time than it used to take to make one on other instruments."

The E-C Inclinometer operates on dry-cell batteries on sound electro-chemical principles. No timing devices are needed and it produces accurate records which can be read immediately. Operates upon an ordinary measuring line and since the instrument has an outside diameter of only 1-5/16" it readily passes through any tool joint. Can be lowered and raised at 800-1000 feet per minute and has been successfully used to depths of over 12,000 feet.

To its simplicity of operation, add a reasonable rental charge and you will understand why drillers everywhere give the E-C Inclinometer the blue ribbon of well surveying instruments.

SPERRY-SUN WELL SURVEYING CO.

Offices: Philadelphia, Pa.; Houston, Corpus Christi, Marshall, Odessa, Texas; Lafayette, La.; Long Beach, Bakersfield, Calif.; Oklahoma City, Okla.; Casper, Wyo.



ASSEMBLED UNITS ON SKIDS

built to Customer's Specifications

TOM NILAND Equipment Co.

PHONE C-4-4703 P. O. BOX 1453 HOUSTON 1, TEXAS

MANUFACTURERS OF: ASSEMBLED UNITS ON SKIDS • SAFETY MACHINERY GUARDS • PANEL BOARDS • STEEL PRODUCTS MADE TO THE CUSTOMER'S SPECIFICATIONS.

BRONZOID

LENGTHENS LIFE OF EQUIPMENT

Only BRONZOID contains pre-treated lead which arrests crystalline growth in the resultant bronze.

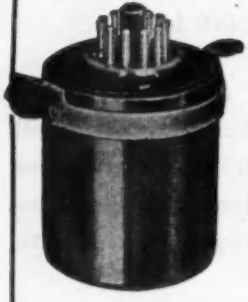
The high compressive strength and low Brinell hardness of BRONZOID combine the best features of bronze and babbitt metal. That's why it is called "The Ultimate in Bearing Bronze."

OIL CITY BRASS WORKS

Founders • MANUFACTURERS • *Machinists*

Beaumont, Texas, U. S. A.

GEOPHYSICAL TRANSFORMERS



sealed against Sub tropical humidity—"Sextuplex shielding," improved uniformity, minimum size and weight, *plug-in terminal block.

* *Also available with terminal lugs.*

GEOPHONE CABLE

Full line of Geophysical electronic supplies.

HARRISON EQUIPMENT COMPANY 1422 SAN JACINTO PHONE PRESTON 4149 HOUSTON • TEXAS

ELECTRONIC • OIL EXPLORATION • SUPPLIES

EXPLORATORY COMPLETIONS

ARKANSAS WILDCAT

Franklin County—Gas Discovery: Sherrod-Apperson's E. B. Moyer 1, 29-10n-27w, flow est 9100 gas, td 3100 ft.

CALIFORNIA WILDCATS

Kern County—Failure: Standard's Notz 2, 18-28s-22e, Lindsey Hills area, abnd 2180 ft.

Orange County — Failure: Richfield Oil's Richfield-Mohawk-Kraemer 1, 36-3s-9w, Kraemer area, abnd 4208 ft.

ILLINOIS WILDCATS

Clay County—Oil Discovery: J. J. Lynn's Craft 1, nw nw se 36-3n-5e, McCl 2928-35 ft, flow 7 bbls, td 2970 ft.

Effingham County—Failure: Globe O&R's Webster 1, se sw se 27-6n-6e, abnd 2792 ft.

Hamilton County—Failure: Texas Co.'s Jenkins 1, nw nw nw 9-5s-5e, abnd 3521 ft.

Jackson County—Failure: John Pugh's Kimmell 1, sw sw se 16-7s-1w, abnd 2206 ft.

Jefferson County—Failure: Cherry & Kidd's Adams 1, se se nw 16-4s-3e, abnd 3086 ft.

Marion County—Failure: W. H. McKain's Beard 1, sw sw se 26-3n-4e, abnd 2779 ft.

Washington County — Failure: Aetna Oil Co.'s Richards 1, ne ne sw 28-1s-1w, abnd 1912 ft.

Wayne County—Failures: Bell Bros.' Garrison 1, sw sw ne 5-1s-5e, abnd 3017 ft.

Lucas Development Co.'s Lucas 1, sw ne sw 7-1n-6e, abnd 3148 ft.

W. F. Lacy's Weber 1, se sw ne 26-1n-9e, abnd 3391 ft.

Robinson & Puckett's Davis 1, nw nw se 21-2n-7e, abnd 3225 ft.

White County—Oil Discovery: Pure's Turner 2, se nw se 31-5s-9e, Cyp 2780-95 ft, flow 31 bbls, td 2949 ft.

White County—Failure: A. K. Swann et al's Veatsch 1, se nw se 8-6s-8e, abnd 3354 ft.

KANSAS WILDCATS

Barber County — Failures: Stanolind et al's Cameron 1, se se sw 8-20s-15w, Lans 3360 ft, Arb 3679 ft, abnd 3733 ft.

Cities Service's Smith 1-F, sec 24-30s-13w, Kind 4353 ft, Vi 4474 ft, Simp 4600 ft, Arb 4706 ft, abnd 4476 ft.

Butler County — Failures: Ward McGinnis' Zeibold 1-B, cnl ne nw 7-25s-7e, Lans 1865 ft, Miss 2745 ft, abnd 2796 ft.

Simpson & Noble's Matlind 1, se ne ne 34-28s-3e, Lans 1950 ft, Miss 2756 ft, abnd 2788 ft.

Cowley County — Failure: S. H. Yarnell's Hansen 1, sw nw ne 31-33s-3e, Miss 3307 ft, abnd 3310 ft.

Ellis County—Failure: Stearns Drlg. Co. et al's Madsen 1, s½ se nw 1-12s-16w, Lans 3010 ft, Cong 3284 ft, abnd 3340 ft.

Greenwood County—Failure: J. F. Enright & Blood's Mitchell 1, se sw sw 21-24s-11e, Oswego 1280 ft, abnd 1895 ft.

Harper County—Failure: Lion O&R Co.'s Muir 1, sec 10-31s-8w, Arb 4931 ft, abnd 5051 ft.

Reno County—Failure: Coralena-Texas Co.'s Williams 1, ne sw sw 9-22s-6w, Lans 2861 ft, Arb 3991 ft, abnd 4038 ft.

Rice County — Failure: Globe O&R Co.'s Roesler 1, sw sw se 30-18s-9w, Lans 2912 ft, Arb 3272 ft, abnd 3200 ft.

Russell County—Oil Discovery: Derby Oil et al's Rogg 1, se sw 7-13s-14w, Arb 3195-3200 ft, pump 462 bbls, td 3200 ft.

Sumner County—Failures: M. Sullivan's Corbin 1, se sw se 17-31s-2w, Miss 3801 ft, Simp 4245 ft, Arb 4341 ft, abnd 4365 ft.

Texas Co.'s Wirt 1, nw nw sw 11-35s-2w, Lans 3494 ft, Miss 4302 ft, abnd 4511 ft.

NORTH LOUISIANA WILDCATS

De Soto Parish—Failure: A. J. Bankhead's Porter 1, 23-12n-13w, Paluxy 2650 ft, sw in perfs 2854-62 ft, temp abnd 3011 ft.

Natchitoches Parish — Failure: California Co.-Signal Oil Co.'s Nebo Oil et al 1, 13-13n-8w, elev 179 ft, massive anhy 4670 ft, abnd 4956 ft.

Richland Parish—Failure: R. W. Williams' Stone 1, c sw se 30-17n-7e, elev 88 ft, Midway 1885, Glen Rose 2480, lower anhy 2534, Pettit 2781-98, Travis Peak 3382, ssg, abnd 7010 ft.

SOUTH LOUISIANA WILDCAT

Calcasieu Parish — Failure: Union Sulphur Co.-Gulf's W. T. Brannon 1-A, 1650 n 1980 w of sec 16-11s-10w, abnd 9980 ft.

MICHIGAN WILDCATS

Mecosta County—Failure: Ohio's Gas Unit 1, c se 33-15n-10w, abnd 1310 ft.

Osceola County—Failure: Taggart Brothers Co.'s Davy 1, c ne 9-17n-8w, abnd 1552 ft.

MISSISSIPPI WILDCATS

Claiborne County — Failures: Pure's A. L. Chapman 1, 13-11n-3e, Tuscaloosa 8940 ft, Massive sd 9875 ft, abnd 10,128 ft.

Sun's B. D. Segrest 1, 7-10n-5e, salt 3547 ft, abnd 3554 ft.

Jones County—Failure: Gulf's E. L. Geiger 1, ne se se 5-9n-11w, Eutaw 6254 ft, Tuscaloosa 6800 ft, Massive sd 7948 ft, abnd 8200 ft.

Rankin County — Failure: Leonard Jones' Warner 1, c ne se 14-5n-1e, abnd 2498 ft.

Simpson County — Failure: H. L. Hunt's Smith County Oil Co. 2, swc 7-10n-17w, Eutaw 7953 ft, Tuscaloosa 8330 ft, Massive sd 9660 ft, abnd 9878 ft.

Tallahatchie County—Failure: Ogg & Clark's G. Burkhalter 1, swc 27-26n-3e, abnd 4558 ft.

NEBRASKA WILDCAT

Dawes County—Failure: Amerada's State of Neb. 1, c ne se 16-33n-49w, Granite 4494 ft, abnd 4494 ft.

NEW MEXICO WILDCAT

Roosevelt County—Failure: Frank M. Hill-Ole Taylor's Caudell 1-A-X, 720 nsl 1980 ewl 22-2s-30e, twin to 700-ft jkd test, elev 4573 ft, jkd 2378 ft.

OKLAHOMA WILDCATS

Kay County—Failure: Max Operating Co.'s Thain 1, nw sw se 27-28n-1e, Lay 2775 ft, Miss 3815 ft, abnd 3853 ft.

Oklahoma County — Oil Discovery: Apex Drlg. Co.'s McKee 1, (OWDD) nw sw 23-14n-4w, Bart sd 6312-27 ft, pump 60 bbls, otd 6935 ft, pb 6360 ft.

Noble County—Failure: Deep Rock's Trehy Jr. 1, se se nw 18-23n-2w, abnd 4743 ft.

Pawnee County—Failure: W. O. Allen's Sanford 1, se sw ne 15-21n-5e, abnd 3130 ft.

Seminole County—Failure: Mid-Continent's Jackson 1, ne ne sw 16-7n-7e, Vi 4319 ft, abnd 4565 ft.

WEST TEXAS WILDCATS

Howard County—Failure: Hickok P&D Co.-Harry Reynolds' McGettes 1, nw nw se T&P Ry. 15, blk 30, T-1-N, elev 2292 ft, salt 784 ft, li 2094 ft, abnd 3262 ft.

Pecos County—Failure: Oscar Donley et al's Wilson-Ohio 1, se se se T.&St.L. Ry. Co. 5, blk 145, elev 2685 ft, Yates 884 ft, gray li 1259 ft, brown li 1635 ft, abnd 1813 ft.

Val Verde County—Failure: B. E. Wilson et al's Wilson-Hodge 1, 420 snl 1082 wel GC&SF Ry. 57, blk E, elev 1935 ft, abnd 430 ft.

Yoakum County — Oil Discovery: Dunigan Bros. & F. T. Brahaney's (was Skelly's) W. S. Hodges 1, (OWDD) c nw nw sect 446, blk D, J. H. Gibson sur, 5½ mi n by w of West pool, nearest prod, elev 3704 ft, Yates 3040 ft, brown li 4100 ft, San Andres 4530 ft, 1500 gals acid San Andres 5200-5301 ft, pump 42 bbls, td 7717 ft, pb 5301 ft.

WEST CENTRAL TEXAS WILDCATS

Brown County—Failure: E. J. Ruwaldt et al's Bourn 1, Harmon Reed sur 131, abnd 1208 ft.

Callahan County—Failure: Harold G. Neely et al's Brown 1, ne ne ne sect 1, S.P. Ry. sur, abnd 1578 ft.

SOUTH CENTRAL TEXAS WILDCATS

Dimmitt County — Failure: Bennett Bros. Drlg. Co.'s Mary Brauchman 1, 660 fr sw&sel Antonio Manchaca sur 9, 2560-ac lse, abnd 5501 ft.

Kimble County — Failure: Texas & Pacific Coal & Oil Co.'s Murr 1, 660 fr sl 660 fr wl Z. H. Short Heirs sur 97, Ellenburger 3840 ft, abnd in Ellenburger lime 4473 ft.

SOUTHWEST TEXAS WILDCATS

Duval County—Failures: Tom Graham's La Juana Rch Co. 1, (OWDD) 2350 se of nwl sur 571 1500 sw of nel sur 125 nw of nwc San Diego de Arriba Gr, 2785-ac lse, elev 463 ft, otd 5010 ft, perf 24 shots 4389-96 ft, flow 11 bbls oil, 20% sw, quit flowing, temp abnd 5105 ft.

H. J. Porter's Jesus V. Ruiz 1-B, 340 fr swl 330 fr sel AB&M sur 136 and 42.78-ac lse, abnd 4005 ft.

Taylor Ref. Co.'s Antonio G. de Romano 1, 330 fr n&el 175.8-ac lse, Las Anacuas Gr, abnd 5637 ft.

Duval County—Gas Discovery: Santa Clara Oil Co.'s Clara Driscoll 3, 1320 fr el 330 fr sl sect 56 3120-ac lse, Santa Rosalis Gr, sect 55, elev 568 ft, perf 36 shots 3160-66 ft, flow 12 mln gas, open, td 3218 ft.

Starr County — Failure: T. E. Stephens' Santos Guerra et al 1, 467 fr w&sl sur 33 porc 107 243.16-ac lse, abnd 4234 ft.

LOWER TEXAS COAST WILDCATS

Bee County—Gas Discovery: Navarro Oil Co.'s Forrest A. Dahl 1, 1552.75 fr nw&sel 466 fr swl 299.07-ac tr, G. Fagan sur, perf 24 shots 6985-93 ft, flow 7,200,000 gas, open, td 7013 ft.

Hidalgo County—Failure: Hamman Oil Co.'s John & George Hamman 3, 10,707 fr el 21,689 fr nl Jackson subdvn Milado Tr and lse, 24,000-ac lse, San Salvador del Tulle Gr, 12,000 s sw well No. 2, abnd 7250 ft.

The OIL WEEKLY'S TRADING POST

USED EQUIPMENT FORUM

CLASSIFIED ADS . . . EQUIPMENT . . . SERVICES . . . PERSONNEL

FOR SALE

Three Steam Rotary Rigs Less Drill Pipe

No. 1

3—125-300 Kewanee Boilers
1—No. 78 Johnson RB Drawworks
1—5 Sheave Type B Regan Crown
1—4 Sheave RB Traveling Block
1—B-6 Emsco Swivel
1—DA Emsco Rotary Table
2—7¼ x 18 Johnson Mud Hogs
2—10 x 4½ x 10 Worthington Boiler Feed Pumps—All Other Equipment to Rig Up.

No. 2

4—125-250 Acme Boilers
1—No. 78 Johnson RB Drawworks
1—5-Sheave Type B Regan Crown
1—66″ Johnson Traveling Block
1—9″ Union Tool Hook
1—B-6 Emsco Swivel
1—DA Emsco Rotary Table
2—7¼ x 18 Johnson Mud Hog Pumps
2—10 x 4½ x 10 Worthington Boiler Feed Pumps—All Other Equipment to Rig Up.

No. 3

3—125-300 Kewanee Boilers
1—No. 78 Johnson RB Drawworks
1—5 in Line Crown
1—66″ RB Traveling Block
1—8″ Union Tool Hook
1—B-6 Emsco Swivel
1—DA Emsco Rotary Table
2—7¼ x 18 Johnson Mud Hog Pumps
2—10 x 4½ x 10 Worthington Boiler Feed Pumps—All Other Equipment to Rig Up.

All the above rigs are complete in every detail and all Boilers will pass Oklahoma Inspection. Address: **Phil A. Cornell,** 1331 S.E. 29th St., Capitol Hill Station, Oklahoma City, Oklahoma

■ FOR SALE: PA-100 International motor, overhauled and in excellent condition. Box 247, Owensboro, Ky.

■ FOR SALE: Re-built TXO Hercules motor, still in factory shop at Salem, Illinois. Good as new. Box 247, Owensboro, Ky.

■ FOR SALE: New TXA Hercules motor block with parts to re-build this motor. Price of block for all. Box 247, Owensboro, Ky.

ATTENTION
Oil Companies, Drilling Contractors
Trucking Companies

For Sale: Oil Field Truck, Heavy Duty White Tandem, Model 643. In perfect condition and completely equipped with brand new 18′ bed, rolling tailpipe, brand new Tulsa model 70 winch, chains, boomers, snatch blocks, extra heavy gin poles, A-frame, double fishplated frame, extra heavy headache rack. Very good tires. Newly painted and ready to go. One of the finest oil field trucks in Texas. Wire, phone or write W. R. Patrick, 1104 Dowling Street, Houston, Texas, Charter 4-4897 or Madison 2-6174.

FOR SALE

1. 3—110 H.P. 250 lb. W. P. Broderick Boilers complete with burners and regulators. Just overhauled, new tubes, new certificates of inspection.
2. 10,000′ used coring line.
3. 129′ painted Derrick and substructure, including new sills.

V. J. MEYER **Atlas Exploration Co.**
1041 Mellie Esperson Building
Houston 2, Texas

OIL LEASES FOR SALE

28,000 acres in Blood Indian Reserve, southern Alberta, selected by Helland Research seismic survey which indicated three structures. Drilling inconclusive. Complete reports available and terms on application to:

WEST PETROLEUM LTD., 1407 Sterling Tower 372 Bay St., Toronto 1, Canada

■ FOR SALE: Two Johnson Steam Rigs, with three boilers to each rig, one 16 inch and one 18 inch pump with each rig, about 5,000 feet 4½ inch drill pipe with one rig and none with the other. All of the equipment in A-1 shape, boilers have just been re-flued on each rig 12 x 12 engine for both rigs. These rigs are capable of drilling 6,000 feet and are priced to sell. Also one 5½ inch draw-works unitized and used for power, together with a Lebus clutch, priced to sell. Get in touch with J. B. Daniel, Phone 122, Fairfield, Texas.

FOR SALE

■ FOR SALE: Used "Welderz Frend" acetylene gas generators. I buy and recondition. W. B. Mackey, 6509 Hillsboro St., Houston, Texas. Phone W-7714.

■ Have gasoline rotary rig, want contracts, or might sell rig.—For Sale: modern seven room rock home and 60 acres, in Buffalo, Leon County, $20,000. A. R. Lewis, Corsicana, Texas.

■ FOR SALE: Fairbanks-Morse 4 x 6 pump, geared to 15 h.p. Fairbanks-Morse engine, with clutch, all mounted on steel skids; in excellent condition; located at Freer, Texas. Ralph E. Caldwallader, 607 National Bank of Commerce Bldg., San Antonio, Texas.

FOR SALE

Sucker Rods 75,000 feet—⅞″ — 4,000 feet —1″—Second hand purchased from Western Kansas warehouse stock. Attractive price. 15,000 feet—2½″ pipe.

GLICKMAN IRON & SUPPLY CO.
439 South St. Francis
Wichita, Kansas

FOR SALE
At Silica, Kansas, Warehouse

5 Lee C. Moore steel rig fronts with 11′ band wheels.
5 Weber Type AB 13 x 14 roller bearing gas engines.
5 OCS Type FS Non-reversible clutches.
5 Large Happy Idlers.
5 Small Happy Idlers.
6 94′ Ideco 330,000 lb. derricks, complete with guy wire and two sheave pumping crown blocks.
6000′ 7″ O.D. H-40 seamless casing, 24 lb. New.
2500′ 7″ O.D. Grade C seamless casing, 24 lb. Used.
2200′ 6″ transite Class 150 New.
200′ 8″ transite Class 150 New.
560′ 10″ Century untested.

J. H. TATLOCK
111 South Topeka Ave., Wichita 2, Kansas
Local Phone 4-6336, L.D. 18

NOTICES

■ DRILLING WANTED: Two Rotary Drilling Rigs available for contract drilling now located in Toombs County, Georgia, capacity 2000 ft. and 4500 ft. gas or butane powered. Shallow rig has portable derrick, deep rig with steel derrick, 6 x 12 mud pump. Will give good price on Georgia contracts. T. R. Davis, Box 221, Vidalia, Georgia.

■ FINANCE WANTED: I have the acreage and complete rotary drilling rig at location in Georgia. Acreage on gravity meter high, in the area near Tropic Oil Company well which picked up a shallow oil sand at 2100 feet. Opportunity for right parties with small capital on a potential new oil field. T. R. Davis, Box 221, Vidalia, Georgia.

LEASES, DRILLING ACREAGE, ETC.

■ DRILLER, when you want statewide sizable lease 15/16 free for completed well first year, let us know. John H. Smith, First National Bank Bldg., Longview, Texas.

■ FLORIDA-GEORGIA, low-priced royalties and drilling blocks, in areas extensively leased by majors. Address: Box 2191, Orlando, Florida.

ADVERTISING RATES

TRADING POST SECTION

Regular classified advertisements for this special section, set in type this size without border, take flat-rate of 7 cents per word for the first insertion and 5 cents per word for each subsequent insertion of same copy. Display advertisements for this section, set in suitably larger type with ruled border, are $5.00 per inch for the first insertion and $4.00 per inch for subsequent insertions. Remittance must accompany copy which should be sent to:

Trading Post Section, The Oil Weekly
P. O. Box 2608 **Houston 1, Texas**

WANTED TO BUY

■ WANTED TO BUY: One ditching wheel only, capable of digging a ditch 4 feet deep and 15 inches wide. Address: A. R. Wurtele, Mix Post Office, Louisiana, or telephone New Roads, Louisiana, 2232.

SITUATION WANTED

■ WANTED: Job as pilot. 1227 flying hours. Commercial license rated from 225 to 6240 horsepower. Donald Feahr, 3347 Meadowbrook Blvd., Cleveland Hgts., Ohio, YE 1186.

■ SALES ENGINEER AVAILABLE: Graduate Engineer (E.E.) 15 years experience in instrumentation and control in Mid-Continent and Eastern industrial markets. Familiar with equipment, application and maintenance in refining, chemical and allied industries, also organization and management of industrial sales operations. Salary required $7,500. Preferred location Gulf Coast. Top references. Address: Box 58, c/o The Oil Weekly, Houston, Texas.

HELP WANTED

■ WANTED: Driller, experienced on Sullivan hydraulic core drill. Location, Rocky Mountains. Address: Box 35, c/o The Oil Weekly, Houston, Texas.

■ Wanted by a consulting geophysical organization, Petroleum Engineers with Hayward Mud-logging experience or its equivalent. Immediate openings in Venezuela. Excellent opportunity for advancement to managerial positions throughout the world. Address: Box 45, c/o The Oil Weekly, Houston, Texas.

■ WANTED: Production Superintendent for Texas Gulf Coast and North Louisiana. Prefer a man with engineering background. Address: Box 50, c/o The Oil Weekly, Houston, Texas.

ENGINEER-WRITER WANTED

An immediate, permanent position is open on The OIL WEEKLY editorial staff for men capable of preparing articles describing new or improved oil field operating methods and equipment. Work highly interesting and educational; includes combination of office and travel duties, and an unusual opportunity to see new things and meet people. Location in Houston office.

In addition to ability to meet people and to write publishable articles on oil field drilling and producing operations in simple understandable language, requirements include: knack of recognizing new operating techniques and "wrinkles," use of camera and typewriter, and personal car.

State education, age, oil field experience, writing experience, and salary expected above traveling and car allowance. Address: The Editor, The Oil Weekly, Box 2608, Houston 1, Texas.

■ HELP WANTED: Gulf Coast District Geologist for expanding independent oil company. Should have wide acquaintance among major companies and be able to do some trading. Position offers good future. Give full personal data, experience, references, and salary desired. Address: Box 59 c/o The Oil Weekly, Houston, Texas.

■ WANTED: Geologist, petroleum engineering background desirable, to serve as senior geologist. Experience in detail geology or evaluation work essential, as work involves maintenance of structural and isopachous maps on flush fields, also preparation similar maps on stripper fields from old well records. Experience with old drillers logs very helpful in latter connection. Car furnished. Attractive salary. Address: Box 60, c/o The Oil Weekly, Houston, Texas.

POSITIONS WANTED BY SERVICE MEN

■ In the interest of both employers and employees, **The Oil Weekly,** through its Overseas Pony Edition, which is sent free to 6,500 former oil men now in the services, has offered to run advertisements from those who will be seeking work once they are discharged. The first advertisements appear below. In some cases **The Oil Weekly** has a few more details but, generally speaking, direct correspondence would be advisable. Unless otherwise indicated it may be some time before the person named in the advertisement is available.

■ Aviator discharged on points wants flying job or work in aviation division. Experience in 4-engine, 2-engine, single-engine planes. Formerly employed as rotary roughneck with major oil company, re-employed in seismograph work. Single, 26; references. Wayne W. Dallas, Box 683, Farmington, N. M.

■ Graduate Tulsa University, petroleum engineering. Oil field experience from roustabout to field engineer in charge of well drilling and completions, also general oil field engineering work, installation and maintenance of equipment. Lt. (jg) J. S. Hankowsky, Public Works Dept., NAS, Minneapolis 6, Minn.

Jackson County—Failure: Moore & Ahern's A. Michalek 1, 330 fr n&wl 80-ac lse, J. J. Linn sur sect 9, perf 4861-69 ft, dst flow oil, gas, sw, perf 4863-65 ft, sw, sso, abnd 7034 ft.

Victoria County—Failure: Gulf's J. J. Murphy 1, 330 fr s&el 1770.21-ac lse, Juan Flores sur, abnd 5998 ft.

UPPER TEXAS COAST WILDCATS

Harris County—Failure: Sun's Foster Lbr. Co. 1-B, start s cor Amasa Turner sur, at w fork San Jacinto River go ne alg sel sur 2510.6 th nw at ra 917.8 to lcn, 1000-ac lse, Huffman area, abnd 8780 ft.

Orange County—Failures: Sun's Green Est. 1, 660 fr n&wl T&NO sur, 646.6-ac lse, elev 28 ft, abnd 8010 ft.

Arkansas Fuel Oil Co.'s Lutcher-Moore Lbr. Co. 1, 1333 s 2475 e of nec lot 8 of T. W. House subdvn 5300 e 4500 n of sly swc B. Johnson sur, Echo area, abnd 9504 ft.

EAST TEXAS BORDER COUNTIES WILDCAT

Harrison County—Distillate Discovery: Ark-La Gas Co.'s F. A. Baker 1, 660 n&w of sec L. G. A. Steele Sur, elev 392 ft, perf 6215-30 ft in Travis Peak, flow 92.7 bbls 55-gr dist, 116.3 bbls sw, est 9,656,000 gas, gor 104,000/1, r pressure 2095 lbs on 15-day prod test, td 6783 ft.

EAST TEXAS WILDCATS

Limestone County—Failure: Walter H. Gant-C. W. Killough et al's Richardson 1, 1300 snl 465 wel of W. N. Miller sur, 1½ mi n of Horn Hill, elev 631 ft, Pecan 1556 ft, Austin 2415-2807 ft, Woodbine 3188 ft, Georgetown (faulted out), Edwards 3400 ft, Paluxy 3748 ft, Glen Rose 3805 ft, Massive anhy 4705-4717 ft, Pettit 5208 ft, Travis Peak 5360 ft, abnd 5569 ft.

Navarro County—Failure: J. B. Daniel et al's Milligan 1, 4000 fr swl 6425 fr sel Martin Latham sur, elev 372 ft, Taylor 1540-70 ft, Austin 2360-2800 ft, Eagleford 2940 ft, Woodbine 3164 ft, abnd 3207 ft.

Upshur County—Failure: Mudge Oil Co.'s Hewitt 1, 2500 fr m/e/el 3100 fr m/n/sl Wm. Carlton sur, 5 mi e Big Sandy, elev 366 ft, Pecan 2580 ft, Austin 3620-80 ft, Woodbine 3731 ft, Georgetown 4060 ft, Ft. Worth 4680 ft, Goodland 5190 ft, Paluxy 5283 ft, Glen Rose 5625 ft, Massive anhy 6913-7153 ft, Pettit 7867 ft, Travis Peak 8012 ft, abnd 8035 ft.

TEXAS PANHANDLE WILDCAT

Wheeler County—Failure: Sinclair Prairie's Mills 1, c ne ne H&GN Ry. 18, blk A-7, elev 2147 ft, abnd in lime and granite wash 4754 ft.

NORTH TEXAS WILDCATS

Archer County—Failures: White & Duncan's Kinder 1-B-96, 1200 wel 150 snl sect 96, blk 5, Clark-Plumb sur, abnd 1220 ft.

W. H. Peckham et al's Wilson Properties 1, 2173 wel 467 snl lot 2, sect 122, ATNCL, elev 960 ft, abnd 4690 ft.

Jack County—Failure: J. M. Bloodworth's Fee 1, 1650 nsl 463 ewl H&GN Ry. sect 2, A-1851, abnd 320 ft.

Throckmorton County—Failure: Bridwell Oil Co.'s Lee 1, 150 ft out nec TE&L Co. sect 2352, abnd 2075 ft.

Young County—Failures: Hedrick Oil Co's Haygood 1, 750 w 275 n of nwc sect 1461, but in sect 3401, TE&L Co. sur, abnd 1001 ft.

J. W. Sparks et al's Jones 1, 1050 snl 450 ewl TE&L Co. sect 273, abnd 703 ft.

WYOMING WILDCATS

Crook County—Failure: Williams Bros.' Gov't 1, nw nw sw 15-55n-67w, Hulett Creek, wtr in top Deadwood 3345 ft, abnd 3380 ft.

WILDCAT STARTS

ALABAMA

Choctaw County: Carter's Sam Alman 1, swc ne sw 5-10n-3w, lcn.

Walker County: Glen D. Rose's 1st Nat'l Bank, Birmingham 2, nw se 30-12s-7w, 4500-ft test.

CALIFORNIA

Almeda County: N. T. Bradford & J. F. Guardino's B & G 1, 7-3s-3e, lcn.

Kern County: Mohawk Pet. Co.'s Layman 1-18, 18-28s-20e, lcn.

Rothschild Oil Co.'s Smith 1, 17-30s-29e, lcn.

U. S. Drlg. Co.'s S.P. 33-2, 33-26s-28e, rig up.

Western Gulf's Woodward-U.S.L. 2, 21-11n-23w, lcn.

Los Angeles County: Bankline Oil Co.'s Orduno 105, 18-4n-17w, lcn.

Charter Oil Co.'s Vinnell 1, 18-5n-16w, lcn.

Cinnabar Drlg. & Expl. Co.'s 1, 24-2s-11w, lcn.

Rothschild Oil Co.'s Cates 1, 7-2s-11w, lcn.

Rothschild Oil Co.'s Broderick 1, 7-2s-11w, lcn.

FLORIDA

Calhoun County: Pure's St. Andrews Bay Properties Co. 1, 2-1s-11w, prep move in.

ILLINOIS

Hamilton County: Texas Co.'s Davis 1, sw nw ne 9-7s-5e, lcn.

Jasper County: Kingwood-Sinclair's Volk 1, se ne sw 20-5n-9e, lcn.

Jefferson County: Texas Co.'s Jefferson O&G 1, nw se se 2-4s-1e, lcn.

Macoupin County: J. O. Gill's Hodges 1, ne ne sw 5-9n-7w, lcn.

Madison County: Duncan & Eason's Rogier 1, sw ne ne 9-3n-6w, lcn.

Fosterberg Drlg. Co.'s Bassett 1-A, nw ne nw 23-6n-9w, dr.

Marion County: Texas Co.'s Ahlf 1, sw sw se 31-3n-1e, lcn.

Perry County: Magnolia's Jansel 1, nw nw se 18-4s-3w, lcn.

Wabash County: Peti Ravenstein's Wood 1, nw nw nw 36-1n-13w, lcn.

Washington County: Max Conray's Pierjok 1, ne se nw 31-2s-1w, lcn.

Wayne County: Standard Drlg. Co.'s Cope 1, nw nw ne 33-2s-5e, dr.

INDIANA

Gibson County: Kingwood Oil's Johnson 1, sec 9-3s-12w, lcn.

Jackson County: G. B. McCamey's Stephams 1, sw sw sw 21-4n-6e, lcn.

Posey County: Mohawk Drlg. Co.'s Hyne 1, nw nw se 9-4s-13w, lcn.

Ryan Oil Co.'s Doll 1, sw sw nw 12-4s-13w, lcn.

KANSAS

Barton County: W. L. Hartman's Schubert 1, sw se 17-18s-11w, dr 810 ft.

Butler County: S. & L. Drlg. Co.'s Criner 1, nw sw ne 34-26s-6e, rur.

Decatur County: Continental's Brown 1, nec 33-3s-27w, dk.

Pratt County: Lion's Ficham 1, sw se 29-28s-12w, woc.

Rush County: Plains Explor. Co.'s Habinger 1-B, ne se nw 7-18s-9w, dr 1365 ft.

Sheridan County: Sterling Colg. Co.'s Fulton 1, nwc 14-6s-27w, lcn.

Wallace County: Champlin's Sweisgood 1, se sw ne 11-13s-42w, dr 3230 ft.

KENTUCKY

McLean County: Sohio-Basin's Floyd 1, 7-M-27, dr.

Ohio County: J. B. Pierce et al's Baird 1, 1-I-31, lcn.

MICHIGAN

Muskegon County: H. C. Nelson's Neilander 1, nw nw sw 8-12n-15w, dr.

MISSISSIPPI

Holmes County: H. A. Fleishman's Jesse Garland 1, sw nw 27-13n-3e, lcn.

Leflore County: Lynn Oil Co.'s J. I. Lundy 1, nec sw 9-17n-1e, lcn.

Rankin County: Leonard Jones' E. P. Rainey 1, sw se ne 14-5n-1e, dr surf hole.

Yazoo County: J. W. Sorrells' W. J. Ledbetter 1, 32-11n-1e, lcn.

NEW MEXICO

Eddy County: Dale Resler et al's Resler 1, sw nw sw 34-18s-27e, 2000-ft cable test.

Lea County: Taylor, Powell & Wallrich's L. E. Page 1, c nw nw 26-24s-34e, 5000-ft Delaware test.

Roosevelt County: Frank M. Hill-Ole Taylor's Caudell 1-A, 720 nsl 1980 ewl 22-2s-30e, twin to 2378-ft jkd hole, rur for 3500-ft test.

OKLAHOMA

Cleveland County: Shell's Wantland 1, ne ne 6-9n-2w, machine.

Noble County: Mid-Continent's Maltby 1, nw ne ne 25-24n-2w, rur.

Okfuskee County: C. W. Titus et al Welty 1, se se nw 32-12n-8e, rog.

Pottawatomie County: Ashland O&R Co.'s Clemmence 1, sw nw sw 21-11n-5e, dr 215 ft.

Seminole County: Winona Oil Co.'s Bruner 1, 24-10n-7e, nw sw sw, rog.

WEST TEXAS

Andrews County: Empire Southern Gas Co.'s University 2, c se sect 11, blk 14, 1-1/16-mi s of Yates sand gasser, lcn.

Crockett County: Moore Explor. Co.'s Halff Est. 3-C, 515 snl 4895 wel I&GN Ry. 69, blk 1, 7500-ft Ellenburger test.

Hockley County: Magnolia's W. T. Coble 1, 660 out nwc Lbr 34, Lge 68, Hardeman CSL sur, 2¾ mi s of Levelland field, 5500-ft San Andres test.

Howard County: Ted Weiner-Lico, Inc.'s G. T. Hall 1, ne ne ne T&P Ry. 48, blk 31, T-1-S, 3200-ft cable test.

Irion County: John I. Moore et al's E. T. Murphy 1, c nw nw GC&SF Ry. sect 1227, 8500-ft Ellenburger test.

Winkler County: Stanolind's Sealy-Smith 7-A, 660 ewl 630 nsl sect 10, blk A, G&MMB&A sur, twin to 1061-ft jkd hole, rur for 7000-ft test.

WEST CENTRAL TEXAS

Coleman County: C. P. Burton et al's Saunders 1, 330 snl 431 fr e&wl blk 6, Jos Lavine sur 698, lcn.

Eastland County: Kerlyn Oil Co.'s A. Harrelson 1, c ne sw H&TC Ry. 101, blk 3, lcn.

Jones County: Crown Cent. Pet. Corp.'s B. A. Stephenson 1, 990 snl 660 wel of n 120 ac lot 4, J. Winters sur 138, lcn.

Eltex, Ltd.'s, H. C. Wooten 1, ne ne sw sec 3, Blind Asylum Lands, Swastika test.

Shackelford County: Hedrick Oil Co.-Jones & Stasney's J. H. Nail 2, 330 nsl 2640 ewl E.T. Ry. sect 92, 1650-ft cable test.

SOUTH CENTRAL TEXAS

Gonzales County: Quintana Pet. Co.'s Anna Spahn 1, 350 fr se&nel 344.4 fr nwl 70-ac lse, Twnshp of Gonzales, n½ blk 17 range 5, 14,000-ft test.

Travis County: E. R. Marts' C. Jacobson 1, 650 s of s cor Elroy twnst 1000 fr nel 330 fr sel 100-ac lse, Harrison sur, 1500-ft test.

SOUTHWEST TEXAS

Duval County: Haynes B. Ownbu Drlg. Co.'s J. T. Dinn 1, 330 fr sl 990 fr el AD&M sur 458, 80-ac lse, 3500-ft test.

Starr County: W. W. Zimmerman's F. W. Seabury 1, 330 fr el 1485 fr nl 150-ac lse, porc 79, tr 77, 4700-ft test.

LOWER TEXAS COAST

Goliad County: Rowan & Hope's Grace Ryals 1, 467 fr nw&swl 220-ac lse, John Shelly sur, 5300-ft test.

San Patricio County: Lonnie Glasscock's Mrs. Louise Newman 2, 660 fr sl 1783 fr wl 500-ac lse, J. W. Bullard subdvn, 2027 w nw No. 1, 7000-ft test.

Willacy County: Phillips' W. S. Livingston 1, 330 fr n&el blk 1 and 793.28-ac lse, E. M. Sorrenson's Arroyo subdvn sh 6, San Juan de Carricitos Gr, 10,000-ft test.

UPPER TEXAS COAST

Brazoria County: S. A. Brewster-W. O. Bartle's L. H. Wisch 1, 1320 s 3000 e fr nwc lse, D. H. McNeel sur, Pledger area, 9000-ft test.

Salt Dome Oil Corp.-Butcher-Arthur's Massey 1, 1430 fr wl 330 e 1650 fr sl of 80-ac lse, HT&B sur, 4½ mi n of Manvel, 9000-ft test.

Washington County: Rutledge and Clark's Stzelecki 1, 611 fr wl 151-ac lse 359 nw at ra fr road, E. R. Miller sur, 4 mi n of Chapel Hill, 7500-ft test.

Wharton County: Superior Drlg. Co.'s H. P. Stockton 1, 476 n&w fr sec 40-ac lse, IRR & Co. sur, Louise area, 6000-ft test.

NORTH TEXAS

Archer County: Ray Horany et al's J. A. Kunkel 1, 1260 nsl 150 ewl of Jacob Staderford sur A-394, 1200-ft rotary test.

Clay County: Continental's E. M. Stallings 1, 1400 snl 467 wel TE&L Co. sect 3252, ⅝ mi se Vashti, 7200-ft Ellenburger test.

Throckmorton County: Cochran & Cain's H. C. Herron 2, 1050 snl 150 ewl TE&L Co. sect 1607, 1200-ft rotary test.

F. E. McConnell et al's D. McKeichen 1, 150 nsl 1050 ewl of 244½-ac lse, sect 2, Comanche Indian Reservation, 1100-ft rotary test.

Wichita County: Bridwell Oil Co.'s Bruce Gillis 1, 1300 nsl 1500 ewl of AB&M Ry. sur A-339, 2100-ft rotary test.

Stanolind's J. E. Roller 1, 660 out swc C.T. Ry. sur A-438, 6½ mi ne Iowa Park, 6000-ft Ellenburger test.

Frank Wood & Closuit's Wm. Lalk 1, 1250 ewl 300 snl blk 272, Waggoner Colony Lands, lcn.

WYOMING

Crook County: Williams Brothers' Unit 1, nw se ne 12-54n-67w, Poison Creek, lcn.

Big Horn County: Hageman-Pond & Hanlon's Herron 1, ne se ne 31-53n-92w, Shell Creek, Madison test.

Bill of Particulars to Be Required by Texas Body

The Texas Railroad Commission has revised its policies to require that applicants for hearings file "a bill of particulars" with each request for a hearing on their property.

The applications should include statement of the nature of the testimony to be presented, where the case is unusual, a statement of facts and a copy of the order proposed, which would compare with the "prayer" contained in petitions filed in the courts. The new policy applies to oil and gas applications exclusively.

SQUEAKS from the BULL WHEEL

Some Miss-take

A very tired soldier went into a USO center where there were booths along a wall for theater tickets, coffee, and food and one for beds. What our hero wanted was a bed. But he got into the ticket line by mistake.

"One," said he.

"Don't you want to take a girl?" asked the motherly lady, and added as he hesitated, eyes popping, "You can if you want to. You'll have more fun if you do."

She'll Compromise

He: "Where will you meet me tonight?"

She: "Half way."

This Curious World

Along with the old shoes tied on the back of the newlyweds' car was a sign which read: "Amateur night."

They all laughed when he stood up to play the piano—but how was he to know he was under the table?

A stork is a bird with many things charged against it which should be blamed on a lark.

Many a rural romance starts off with a gallon of corn and ends up with a full crib.

Marriage is like boxing: The preliminaries are often better than the main event.

Most men are chain-lovers . . . always ready to light a new flame from the embers of the last one.

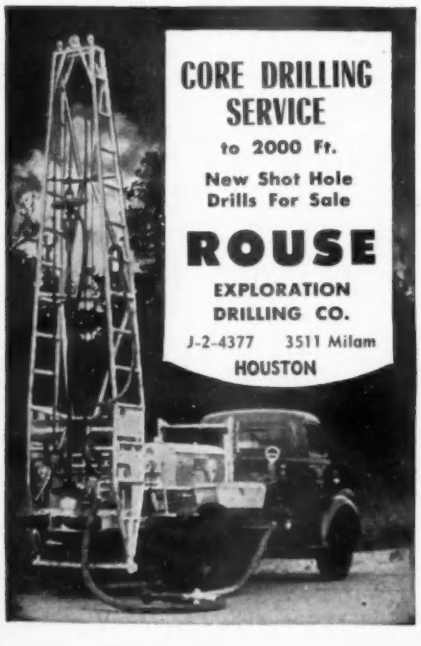
Flatterer

"Smile that way again, my darling."
She blushed and dimpled sweetly.
"Just as I thought. You look like a chipmunk."

Perfect Wife

She: "When we get married I'm going to cook, sew, darn your socks and lay out your pipe and slippers. What more can any man ask than that?"

He: "Nothing, unless he's evil-minded."



And Lock the Door

In order to classify the new pupil, the teacher was asking him a few key questions.

"Who gave us this beautiful school?"

"President Roosevelt," was the matter-of-fact reply.

"Who gave us our wonderful cross-country highways?"

"President Roosevelt."

"Who makes the trees grow and the flowers bloom?"

This time the lad answered, "God."

Immediately a voice piped from the rear, "Throw that Republican out!"

Quota Met

Just before the battle the commanding officer shouted: "Men, the Germans are coming! We're outnumbered four to one, so do your stuff."

Private Hanks began to blaze away, but in about five minutes he stopped, leaned his rifle against a rock, and lit a cigarette.

"What's the matter with you?" roared the officer.

"Heck, I done got my four already."

Broad Minded

Mandy: "I can't come to work tomorrow, Ma'am. My little boy is sick."

Ma'am: "Why, Mandy, I thought you said you were an old maid."

Mandy: "I is, Ma'am; but I ain't one of them fussy kind."

Correction

"Did Edison make the first talking machine, Pa?"

"No, son, God made the first one, but Edison made the first one that could be shut off."

Poet's Nook

You sing a little song or two
You have a little chat;
You make a little candy fudge
And then you take your hat.

You hold her hand and say
Good night as sweetly as you can;
Now, ain't that a helluva evening
For a fine, big healthy man!

Making Him Feel Good

"Julia, your hair is mussed and your dress is torn. Did that boy kiss you against your will?"

"No, father. He just thought he did."

In a Hole

Sam, innocent of all golfing lore, watched with interest the efforts of the man trying to get out of the bunker.

At last the ball rose in a cloud of sand, hovered in the air, dropped on the green, and rolled into the cup.

"Gosh," said Sam with a chuckle. "He'll have a tough time getting out of that one."

Buttinsky

A robber was holding up a Pullman car. "Out with the dough or I'll kill all the men and molest the women!"

An elderly man said indignantly: "You shall not touch the ladies!"

Just then an old maid in an upper berth yelled out: "You leave him alone —HE'S robbing this train."

"Best Bet Yet"

This reinforced disc of PBX synthetic rubber has many time and money saving advantages. Reduces fire hazard—Reduces costly fishing —Cleaner tubing and floors —Making for safer working conditions—Protection to crew—Automatic action.

See Composite Catalog

Patterson-Ballagh PIPE WIPER

Los Angeles 1 • Houston 10 • New York 6

Stanley J. Anderson of Ring Oil Company was named president of the Petroleum Accountants Society of Los Angeles. Other officers chosen are **Alfred F. Hagen** of Shell Oil Company, first vice president; **John P. Vezetti,** Sunset Oil Company, second vice president; and **Kenneth Vandervort,** Amerada Petroleum Corporation, secretary-treasurer.

Don Gilman, executive vice president of the Western Oil and Gas Association, addressed the recent annual dinner meeting of the Taft, California, Chamber of Commerce on "Oil for the Future."

George Beaulieu, administrative assistant in the oil and gas division of the Osage Indian agency at Pawhuska, Oklahoma, retired July 1, after more than 40 years with the agency. Beaulieu, who entered the Indian service in 1902 and the Osage agency in 1905, was assistant to the late **J. George Wright** when many millions of dollars were paid for Osage leases.

V. B. Nelson, consulting engineer, has opened offices at 2132 Commerce Building, Houston, specializing in the calibration of pressure vessels, ships, barges, tanks and trucks, and the correlation of gauging media.

Lt. Col. L. E. Patterson, veteran of the South Pacific who participated in the Java campaign early in 1942, has returned to Odessa, Texas, on terminal leave prior to his release from active duty. He plans to rejoin the West Texas geological staff of the Cities Service Oil Company.

D. A. Little, president of Magnolia Petroleum Company and Magnolia Pipe Line Company since March, 1933, is reported improved after suffering a stroke while at work in the Dallas headquarters of the companies.

Vernon B. Bottoms, former Oklahoma City district production engineer for the Sinclair Prairie Oil Company, has been engaged by The Superior Oil Company of California as its West Texas district petroleum engineer with headquarters at Midland.

James S. Meriwether, scout for Shell Oil Company and president of the West Texas Oil Scouts Association; **Paul R. Martin** of The Pure Oil Company, and **A. A. Jones** of The Atlantic Refining Company comprise a committee that will erect a building at Midland for cutting formation samples and for the weekly check-meet. The one-story structure will be 44x120 feet, and has been financed by the companies that maintain scouts in the district.

Thomas L. Barks, managing director of Barks, Williams & Co., Limited, London, England, European sales representatives for Hanlon-Buchanan, Incorporated, was in Tulsa to discuss postwar plans with his associates.

John F. Bricker of Houston has been appointed chief scout of Humble Oil & Refining Company, succeeding the late **Dell J. Crosby.** Bricker has been connected with the geological department of Humble since 1928. After scouting in the Cisco and Pampa areas, he came to the Houston office as a title man, and was doing land work at the time of his appointment as chief scout.

John F. Bricker

W. V. Veitti of Houston became assistant to the manager of the producing department of The Texas Company on July 1. He succeeds **H. S. Cole, Jr.,** resigned.

Robert R. Durkee, F. L. Mathews and **K. D. Owen,** all of Houston, have organized the Rio Grande Drilling Company with a capital stock of $70,000. Headquarters are in the Neils Esperson building, Houston.

Lloyd M. Bentsen and **Elmer C. Bentsen** of Mission, Texas, and **Mike E. George** of Waterloo, Iowa, have organized the Rancho Grande Oil Company with headquarters at Mission.

C. J. Brown, with headquarters in the Sterling building, Houston, has been appointed Texas agent for the Hendrickson Oil Company of 39 South LaSalle Street, Chicago.

Ernest C. James, who has represented Interstate Pipe Line Company at Canton, Mississippi, has been transferred to the Oklahoma City office.

Robert M. Cunningham of Phillips Petroleum Company has been transferred from Amarillo, Texas, to the Oklahoma City district.

Rhea Brooks, formerly district manager for Mid-Continent Supply in Kilgore, Texas, has resigned to enter business as the Rhea Brooks Company in Kilgore, specializing in pumping equipment.

Joe H. Russell of Houston, vice president of Gulf Oil Corporation, is recovering from a recent heart attack.

Robert B. Parnell of Grand Haven and **Glenn Fenton** of Reed City, formerly office manager and maintenance superintendent, respectively, for the Ashby Drilling Company, have formed the Fenpar Drilling Company, a partnership, and will enter the contract drilling business in Michigan.

Dr. O. S. Duffendack, director of research for North American Phillips Company, New York, has been appointed vice president and director of research and engineering. **E. J. Kelly,** manager of manufacturing, has been made vice president and general factory manager.

Duffendack was formerly professor of physics at the University of Michigan. During the war he has been a director of research with the National Defense Research Committee.

William L. Davis has been elected vice president in charge of operations for United States Steel Supply Company, subsidiary of U. S. Steel Corporation, with headquarters in Chicago. Associated with U. S. Steel subsidiaries for 40 years, Davis has been connected with the supply company for three years as manager of operations.

Mark Kirkpatrick succeeded **John A. Turner** as assistant director of the supply and transportation division for District 2, PAW. Kirkpatrick is on leave of absence from The Pure Oil Company and had been stationed in Washington, D. C., before going to District 2 headquarters at Chicago.

E. C. Aldridge, formerly head of the transportation department of the operating division of United Gas Corporation, has been transferred to the Shreveport general office, following his appointment to the positon of superintendent of all the companies affiliated with United Gas Corporation. He has been with the company since 1937.

L. C. Burchfield, owner of Triangle Blue Print Company, Tulsa, and former chief engineer for Cosden Oil & Gas Company, was honored in the current issue of the "International Blue Printer" with an interesting character sketch. Burchfield is a director of the International Association of Blue Print and Allied Industries.

Major John Ed Cooper, for the past three years with the Air Technical Service Command of the United States Army Air Forces, has resumed his connection with the Republic Supply Company as manager of tubular sales. His headquarters will be at the general offices of the company in Houston.

Maj. John Ed Cooper

Cooper is a native of Oklahoma and was graduated from the University of Oklahoma in 1934. For several years prior to entering the armed services he represented Republic in Oklahoma and Illinois-Indiana oil areas.

Stuart A. Whitehurst has joined Allis-Chalmers Manufacturing Company, Milwaukee, as an industrial engineering specialist and head of the industrial sales department of petroleum industries activities.

Stuart A. Whitehurst

Whitehurst entered the petroleum industry by joining The Texas Company at the Port Arthur, Texas, refinery, later serving in the terminal division of the New York office. Subsequently, he was with Shell Oil Company and Alco Products division of American Locomotive Works.

In 1941 he joined the engineering and construction division of Jones and Laughlin Supply Company. He later served as administrative assistant to the president in Tulsa, and then became manager of sales of the engineering and construction division.

Charles E. Young, former supervisor of economic research, has been appointed manager of the statistical research department of Westinghouse Electric and Manufacturing Company, Pittsburgh.

Young, a specialist in industrial economics, will direct investigations into business conditions, and study relations of such general trends to company activities.

Al Braithwaite, field engineer for George E. Failing Supply Company, Enid, Oklahoma, discussed the process of taking large cores and illustrated his talk with a motion picture, "Cores Will Tell," at a meeting of the Purchasing Agents Association of Tulsa.

W. F. Slater has been appointed manager of the technical service department of Kobe, Incorporated, Huntington, Park, California.

W. F. Slater

After leaving the engineering schools of Oklahoma and Tulsa Universities, Slater entered the oil production business, and in 1938 was actively engaged in engineering and production studies of pumping equipment problems, doing work both in California and the Mid-Continent oil fields. In 1941 he became associated with Kobe as Tulsa district manager. In 1942 he was appointed California division manager.

Conrad A. Goldstrohm has returned to American Chain Division of American Chain & Cable Company, Inc., with headquarters at York, Pennsylvania, after having served with the War Production Board in Washington, D. C., since November, 1942.

While with WPB he directed production and distribution of welded, weldless and automotive chain and, with the collaboration of the Bureau of Standards, developed a simplification and standardization program which was approved by the Army, Navy and the chain industry. He will remain on the WPB staff as a consultant.

Allen W. Schmidt has been appointed sales promotion manager of Kelite Products, Inc., Los Angeles. He formerly was employed in the production of promotional and technical literature for Little & Company, Los Angeles advertising agency.

H. E. Chapler has been appointed sales manager of the oil controls division of Minneapolis-Honeywell Regulator Company, Minneapolis, with headquarters in New York.

Willis Bronkie has joined the engineering and sales staff of the Victaulic Company of America, with headquarters at 30 Rockefeller Plaza, New York. Bronkie began his career with the Anaconda Copper Mining Company in Chile, South America, and later went to Canada, where he was employed by the International Nickel Company of Canada. Subsequently, he was associated with the National Lead Company at Tahawus, New York, as mine superintendent. The Ingersoll-Rand Company was his employer before he entered government service with the Foreign Economic Administration in Brazil.

G. S. Crane, former vice president in charge of sales and engineering for Cutler-Hammer, Milwaukee, has been elected president. Other officers elected include: **F. R. Bacon,** chairman of the board; **H. F. Vogt,** chairman of the executive committee, and vice president and treasurer; **J. C. Wilson,** vice president and secretary; **P. B. Harwood,** vice president in charge of engineering; **P. S. Jones,** vice president in charge of sales; **Philip Ryan,** vice president in charge of manufacturing; **E. W. Seeger,** vice president in charge of development and assistant secretary; **M. R. Fenno,** assistant treasurer; and **J. C. Springer,** assistant secretary.

Walter A. Culin, formerly of New York City, has been appointed assistant treasurer of Standard Oil Company of Indiana at Chicago. He has been a vice president, treasurer and a director of Federal Water and Gas Corporation of New York City, with which he has been associated for the last 19 years.

W. F. Huggins has been appointed manager of foreign sales of Le Roi Company, Milwaukee.

W. F. Huggins

Huggins will be responsible for establishing foreign jobbing distributors, manufacturers' representatives and agents.

During and after his training in international business at Ohio State University, he spent several years in the Argentine and in Chile. His offices will be at the general and administrative headquarters of the company in Milwaukee.

Randle R. Hanks has been appointed district manager of Industrial Supply Company in Southwest Texas, reopening the San Antonio office at 1801 Milam Building. Hanks entered the Navy soon after Pearl Harbor and was an instructor in mechanics. He recently was released from active duty.

Deaths

Arch I. Watson, Kansas production executive, died in Wichita, Kansas, July 1. Watson, 69, went to Wichita in 1931 as production superintendent for the Tom Johnson Oil Company after holding a similar position with Prairie Oil & Gas Company at Augusta. He retired three years ago as superintendent for the Winkler-Koch Engineering Company.

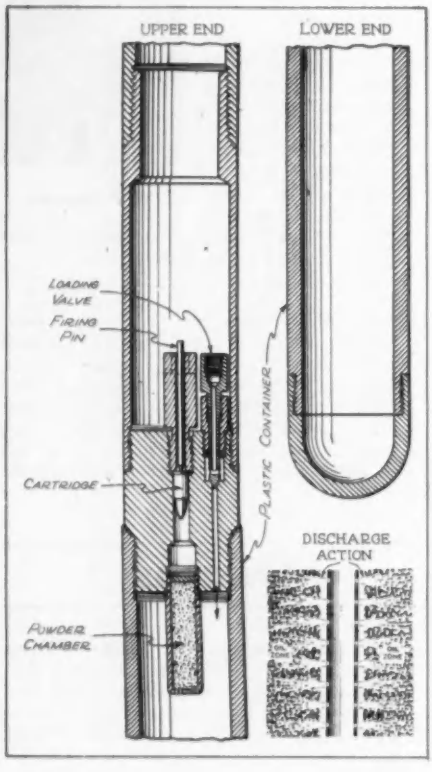
Myron J. Czarniecki, vice president in charge of sales for A. M. Byers Company, died June 18 near Pittsburgh. He was 53. He joined Byers in 1913 and became manager of the Chicago sales office in 1919. He was transferred to New York in 1920 and managed that office until he was brought back to Pittsburgh in 1925 to become assistant general manager of sales. He was advanced to general manager of sales in 1930 and his election to vice president in charge of sales came in 1934.

William G. Carnahan, oil well driller for nearly 40 years, died June 28 in Tulsa. Carnahan, 77, was well known in many northeastern Oklahoma oil areas and had drilled for many major companies and independents.

Bert D. Doss, 54, West Texas field clerk for Humble Pipe Line Company, died June 28 of a brain hemorrhage at Midland.

1—Cleaning Method

Oil Well Engineering Company, Houston, has introduced a combination screen and producing formation cleaning service, which utilizes a chemical gas-explosive method to accomplish both operations at the same time. The method is known as the "Patten Process."



The pressure and heat generated by the expansion of chemicals, released suddenly from a container run in the hole cleans the perforations in liners and screens. After forcing free any obstructions in liner perforations, the pressure and heat forces new channels in the sand and cleans old ones. Cement, drilling mud, paraffin, scale and other deposits are pulverized or dissolved. The action also forces the sand away from the liner, allowing its free removal.

The method of application consists of the use of a plastic tube 2½ inches in diameter and from 5 to 15 feet in length (depending on amount of liner to be cleaned), upon which there is made up a steel head containing a small powder chamber, loading valve, cartridge container and firing pin. This assembled unit is chemically charged by high pressure lines from a service truck, and lowered into the well on tubing. A hookwall packer at the top of the liner forms a complete upper shutoff, causing the chemical action to spend its force laterally. The device is fired by a go-devil striking the firing pin. The plastic container is designed to operate in temperatures up to as high as 300° F., and are not effected by fluid in the hole. Upon detonation, the plastic container disintegrates into a very fine substance similar to lead powder, and sinks to the bottom of the wells to become dissolved in the oil. The chemicals have an expansion of 12 to 14 thousand times their diameter.

Increases in production ranging from 2½ to 15 times pretreating rates are reported.

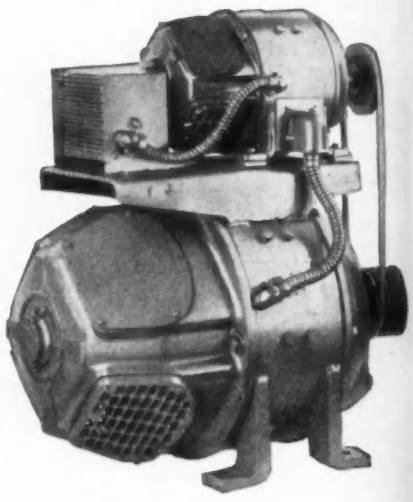
The company charges for the service on the basis of the depth to which the assembly is run and the length of liner required to clean the perforations or sand, plus a mileage charge on trucks. For example, a 20-foot liner run to 9000 feet has a service charge of $400, while a similar liner run to 6000 feet costs $360.

2—Lighting Generator

General Electric Company, Schenectady, New York, has developed a lighting generator for power drilling rigs, known as the Thyrite. This generator is a controlled d-c type which may be V-belt driven from one of the main engines.

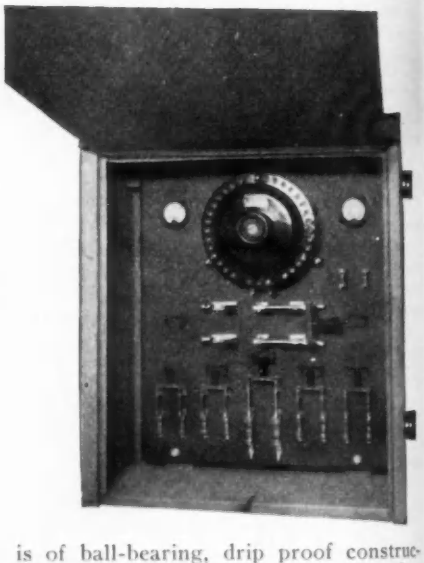
Eliminating a separate engine-driven auxiliary power unit except when the main engines are shut down, the generator reduces fuel and maintenance cost and also saves the expense for the auxiliary engine.

The generator is said to hold automatically a practically constant voltage



within plus or minus 5 percent over a range of speed nearly 4 to 1, and will give good voltage conditions even when the engines are varied widely in speed when making a round trip.

The Thyrite-controlled generating unit



is of ball-bearing, drip proof construction, and includes a top-mounted exciter and an enclosed Thyrite resistor, all assembled as a unit and wired at the factory. Numerous ratings are available, the popular ones being 3, 5, 7½, 10, 15, and 25 kilowatts at 125 volts direct-current, designed to maintain constant voltage and continuous full-rated output at any point in a speed range from 850 to 3200 revolutions per minute.

The equipment includes a small ebony-asbestos control panel on which is mounted a voltmeter, an ammeter, a voltage-adjusting rheostat, a double-throw fused line switch to transfer the load to a stand-by unit when desired, and receptacles with plugs, or fused feeder switches, for load circuits.

Use This Convenient Coupon for Additional Information

Check below the numbers identifying items on which you want additional information. Mail coupon to The Oil Weekly and your request will be forwarded to the manufacturer.

THE OIL WEEKLY
P. O. Box 2608, Houston 1, Texas, U.S.A.

Please have manufacturers send me, without obligation, more information on items shown in July 9 issue of The Oil Weekly as checked below:

1 2 3 4 5 6 7 8 9 10 11 12
13 14 15 16 17 18 19 20 21 22 23 24

In addition to information checked above, I would like more data on products or services advertised elsewhere in this issue by_____ Company

Name_____ Title_____

Company_____

Address or P. O. Box_____

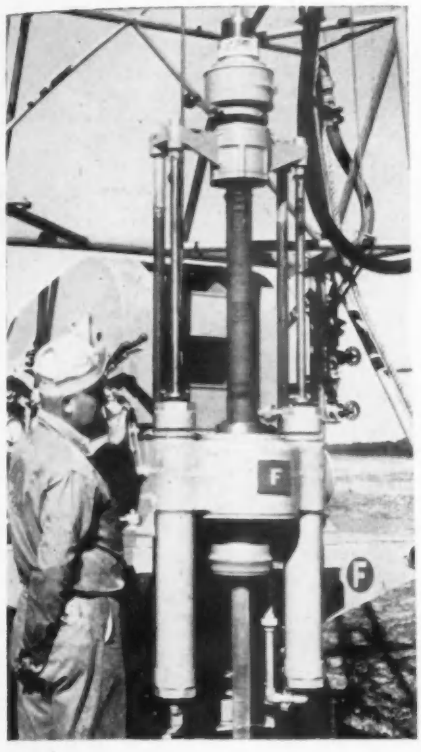
City_____ State_____

(To avoid delay print or type clearly name, company and mailing address)

3—Automatic Pull-Down

The George E. Failing Supply Company, Enid, Oklahoma, and Houston, has perfected a new automatic pull-down as optional equipment on all Failing 1500 Holemaster drills.

This device gives the hydraulic type



core and shot-hole drills all the features of the long stroke or cable "pull-down" drills. Hand chucking is eliminated through the use of the pull-down, which automatically grips the Kelly on the "down" stroke of the hydraulic and releases on the "up" stroke.

After two years of constant experimenting models have been in actual use in field work for eight months. Results, it is said, have been universally satisfactory.

4—Tong Head

Webb Wilson Oil Tools, Huntington Park, California, announces a casing tong head to be used in connection with the present Web Wilson type AAX extra heavy and type B regular rotary tongs. With this tong head interchangeable lug jaws can be supplied to fit a top range to take up to 16-inch outside diameter casing and couplings.

5—Electrode

Westinghouse Electric Corporation, Pittsburgh, Pennsylvania, has developed an electrode for speedy and economical welding in all positions with A-C and D-C reverse polarity. This electrode, which is available in seven diameters from 5/16 to 3/32 inches, is heavily coated and forms a light, porous slag which is easily removed from each pass by light brushing.

6—Blade Bit

Hunt Tool Company, Houston and New York City, has an improved design welded-in blade drag bit which is claimed to save considerable time in blade replacements.

Made in 2-blade and 3-blade types, of forged steel blades, the bit is especially adaptable for operations remote from materials and shop facilities.

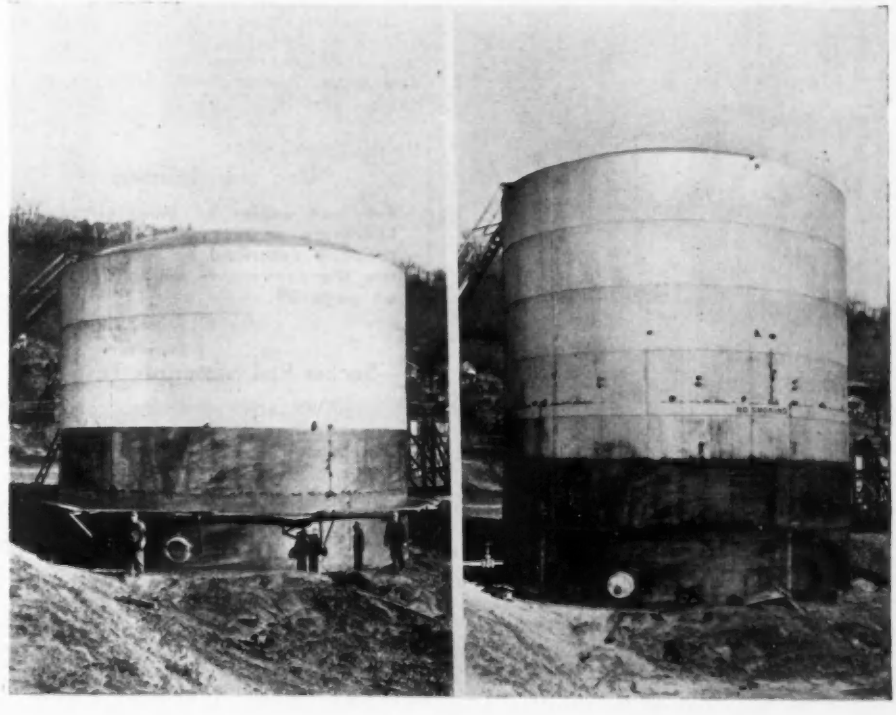
This bit referred to as "export model," is designed to simplify and remove possibility of error in blade replacement. In the 2-blade type, positive correct location of blades has been accomplished by the drilling of a locating hole in the center or axis of the blades, and a locating pin in the blade slot of the bit head. The locating hole and pin are not required in the 3-blade type bit because this type blade cannot be moved laterally and can only be placed in the head in the proper position. The operator's crew can now replace blades in the field without the use of jigs, fixtures, or gauges. No drilling edge grinding is necessary. The grinding, to insure blades that are sharp and to gauge, is done by the manufacturer, and also the setting of inserts and hard facing. All the user has to do is place the blade in the bit and weld.

The bit is furnished in sizes 5 to 25 inches, with any connection desired.

Left: 2-way head. Note locating pin. Above: 2-way blade. Note locating hole. Right: Blade in head ready to weld.
2-way bit ready to run.
3-way Hunt welded-in blade bit, ready to run.

7—Tank Enlargement

Stacey Brothers Gas Construction Company, Cincinnati, has developed a new method by which liquid storage



tanks may be enlarged to as much as twice initial size without dismantling the original structure.

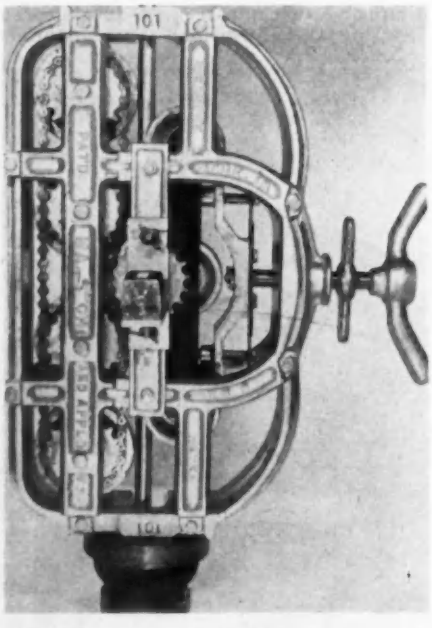
The old tank is literally boosted to new capacity height as new rings are added at the base by a patented process which makes use of virtually all of the original structure in assembled form. Such re-use, along with the utilization of the original foundation and the minimum dislocation of connections, contributes much to the economy of the process as well as to the speed with which a job may be completed.

As much as 100 percent additional capacity may be added by cutting the existing tank shell at the base, adding new radial plates, and building a new shell around the old structure to give the desired height. Water is then run into the tank up to the new shell level, so that compressed air may be introduced to float and old cover shell up to the new level. Various controls hold the tank steady and level to 1/16-inch, while 4-inch filler plates are inserted between the shells, and the two units are tack welded in place.

When air pressure is released, and the water drained from the tank, the two shell sections and fillers are completely seal welded on the outside. Inside, the old shell is trimmed and welded at intervals around its circumference, and the enlarged tank is ready for connections and service.

8—Well Depth Measurer

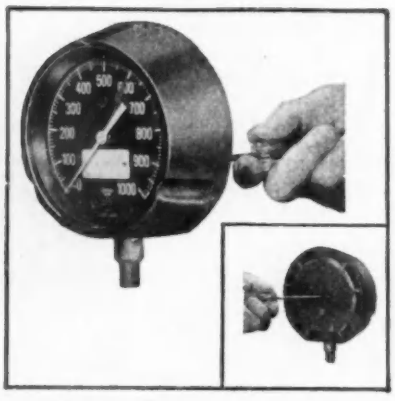
The Mason Measure Meter Company, Tulsa, Oklahoma, has perfected a device which permits well depth measurements with any size wire line, including the old flat steel tape. The device can be



used directly with the Mason meter removing the trolley used in measuring drilling cable or sand line and inserting the new attachment. It is claimed that accurate measurements can be obtained up to .001 of a foot.

9—Gauge Pointer Adjuster

Certified Gauge & Instrument Corporation, Long Island City, New York, has perfected the "Hairline Pointer Adjuster" for pressure gauges. It is claimed that with this device, pointers can be



quickly and easily reset without removing the glass or ring, a great convenience when testing gauges on test pumps and dead weight testers.

Slotted adjusting screw in back of case changes the relative position of the roller and the cam of the Helicoid movement, thus changing the position of the pointer. Fine adjustment is obtained by slight turn of the screw.

Literature

10—Centrifugal Pumps

The Deming Company, Salem, Ohio, has published a booklet of basic information about standard types of centrifugal pumps. Chief purpose of the booklet is to assist those who are directly involved in the application and selection of centrifugal pumps. The title is "Facts You Should Know About Centrifugal Pumps and Impellers."

Use the Coupon

For free copies of Manufacturers' Literature or more information on products described on these pages, use the convenient mailing coupon on page 84.

11—Sucker-Rod Materials Test

A new tentative code for corrosion-fatigue testing of sucker-rod materials, Code 30, has been published by the Division of Production of the American Petroleum Institute. Corrosion is becoming a more serious problem in many phases of drilling and production operations, and this tentative code is an attempt to assist the operator in evaluating its effect on sucker-rod materials.

Formulated by the Topical Committee on Materials of the Central Committee on Drilling and Production Practice, the purpose of the code is to provide uniformity in the method of obtaining data on the behavior of sucker-rod steels under repeated stress, under specified standard conditions. It provides, further, for the establishment of an API corrosion-fatigue value on sucker-rod materials; and prescribes and describes: (a) the use of a specimen of specific design; (b) a test procedure involving proper speed control; and (c) a method of reporting tests.

Code 30 may be obtained from the New York and Dallas offices of the American Petroleum Institute at 50 cents per copy, usual discount for quantity.

12—Gas Burners

Volcano Burner Company, Houston, has published a booklet on all steel, low pressure gas burners for oil field boilers containing complete descriptions, specifications and prices. Installation instructions, considered by the manufacturer as highly important to the proper operation of this equipment, are included.

13—Diesels

Caterpillar Tractor Company, Peoria 8, Illinois, discusses the application of Diesels to drilling in a new bulletin titled "Drilling Deep and Fast with Caterpillar," and numbered Form 8994.

The eight-page color booklet pictures various drilling operations in many oil fields as well as odd jobs around the fields such as building access roads, clearing and leveling derrick sites and building slush pits.

14—Friction Material

Raybestos Division of Raybestos-Manhattan, Inc., New York City, has published a catalog of Raybestos friction material for industrial use. Of special interest to the oil industry is the material on shovels, draglines, cranes and tractors.

15—Contractor's Guide

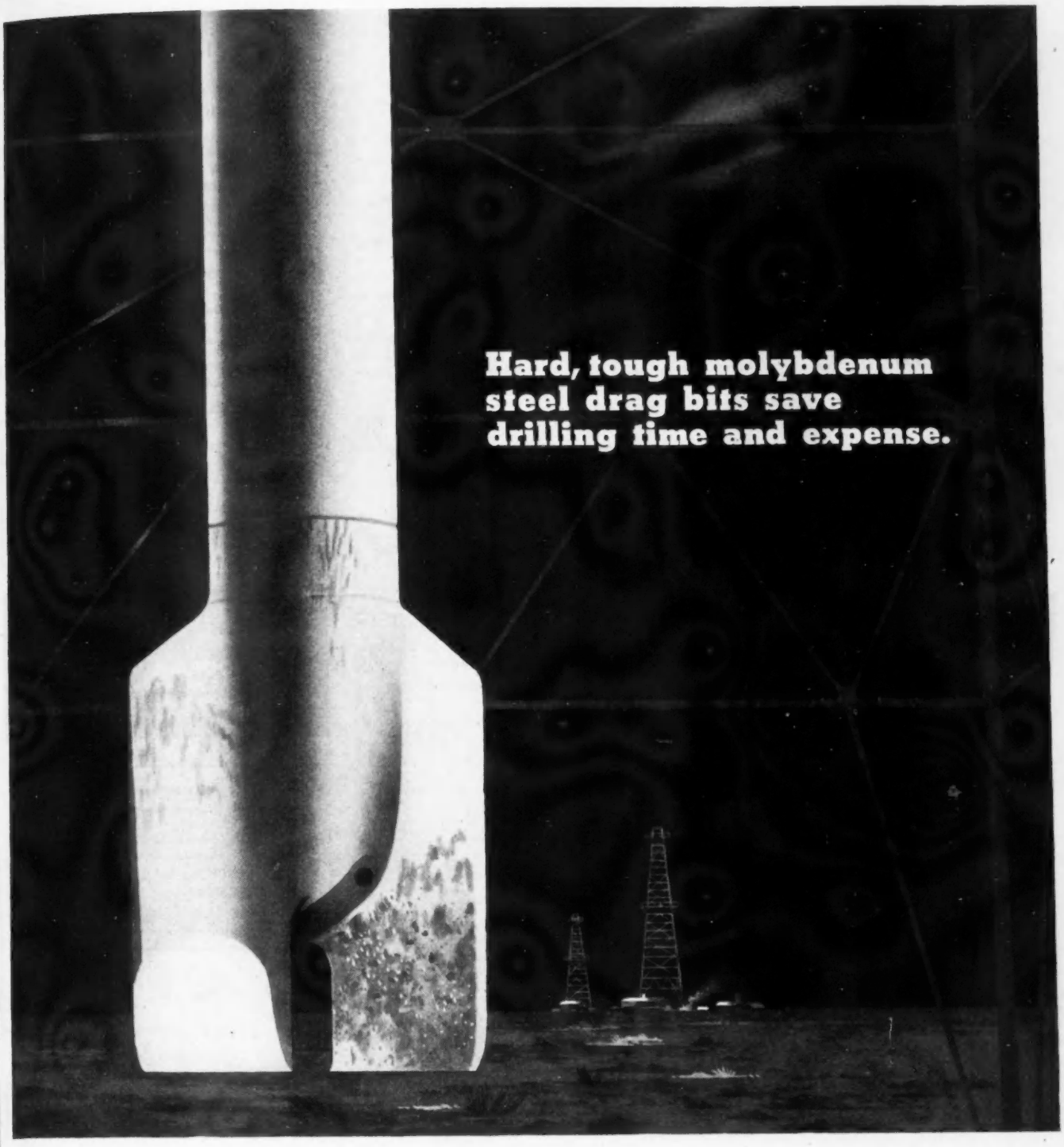
The Army and Navy have prepared a Contractor's Guide for Prime and Subcontractors to use as an outline to methods of advance planning and practical procedures for settlement of terminated contracts. The procedures outlined will be found useful for contractors furnishing materials to the Maritime Commission, the Reconstruction Finance Corporation, and the Treasury Procurement Division.

Copies may be obtained without charge by written request to the Readjustment Distribution Center, 6th Floor, 90 Church Street, New York 7, New York, attention Lieutenant E. P. Lull.

16—Electrodes

Page Steel & Wire Division, American Chain & Cable Company, Inc., Monessen, Pennsylvania, has prepared a digest of facts about the line of Page electrodes and gas welding wires, written from the buyer's viewpoint.

Data presented is arranged for ease of reading and using, and includes facts on physical properties, analyses of the weld metal deposit, operating characteristics and recommended current ranges.



CLIMAX FURNISHES AUTHORITATIVE ENGINEERING DATA ON MOLYBDENUM APPLICATIONS.

ARMY E NAVY

MOLYBDIC OXIDE, BRIQUETTED OR CANNED • FERROMOLYBDENUM • "CALCIUM MOLYBDATE"

Climax Molybdenum Company

MOLY

500 Fifth Avenue · New York City

ALTEN
Special Flexible STUFFING BOX

Heavy Pattern Type with Pumping Tee

ONE OF OVER 300 ALTEN OIL FIELD PRODUCTS

See Composite Catalog for complete list or write us for catalog.

Fig. F-658

ALTEN'S
FOUNDRY and MACHINE WORKS
Lancaster, Ohio
Established 1889
EXPORT OFFICE: 342 Madison Ave., New York 17, New York
TEXAS OFFICE: 45 San Jacinto St., Houston 1, Texas
Leading Supply Stores Carry All Alten Oil Field Equipment

FIELD GEOLOGY
By FREDERICK H. LAHEE

Chief Geologist of the Sun Oil Company, Formerly Assistant Professor of Geology, Massachusetts Institute of Technology

Revised and up-to-date
Fourth Edition

A standard and widely-used manual of geological exploration and mapping, combining both textbook and reference features, especially suitable for petroleum and mining geologists and engineers. Presents methods and keys for the recognition and interpretation of land forms and structures, and explains fully how to take and record data in the field, make and interpret maps, etc. Fully revised in line with advances in geological research and practice, with valuable new material on mass movement, flow structures and fracture systems in igneous rocks, directional drilling, use of gamma-rays in subsurface correlation, and electrical logging.

CONTENTS: Introduction. Features Seen on the Surfaces of Rocks. Rock Particles and Fragments. Original Surface Features of Sediments. Original Structures and Structural Relations of Sedimentary Rocks. Field Relations of Igneous Rocks. Tilted and Folded Strata. Fractures and Fracture Structures. Metamorphic Rocks. Mineral Deposits. Topographic Forms. Topographic Expression. Topographic Maps and Profile Sections. Geologic Surveying—General Observations. Geologic Surveying — Instruments and Other Equipment Used in Geologic Field Mapping. Geologic Surveying—Instrumental Methods in Field Mapping. Geologic Surveying—Airplane Mapping. Subsurface Geologic Surveying. Modes of Geologic Illustration. Interpretation of Geologic Maps. Geologic Computations. Preparation of Geologic Reports. Geophysical Surveying. Appendix of useful tables.

853 Pages, 5 x 7¼, 599 Illustrations
$5.00

SEND ORDERS TO

GULF PUBLISHING CO.
P. O. Drawer 2608 Houston, Texas

Fort Worth Oil Man Defends Stripper Well Subsidies

The stripper well subsidy voted in August has played an important part in conserving the nation's oil reserves, according to Charles F. Roeser, independent oil operator of Fort Worth, who defended subsidy payments in a telegram to Orville D. Judd, fuel price chief for OPA.

According to Roeser the subsidy, which was never intended as a stimulant to wildcatting, has assisted in preserving large oil reserves underlying pumping wells; prevented abandonment of thousands of small producers; stimulated nationwide drilling in shallow areas, and stimulated surveys looking towards secondary recovery when conditions become normal.

Advertisers' Index

EDITORIAL INDEX, PAGE 21

• Indicates detailed information on products and services included in 1943-1944 edition of Composite Catalog of Oil Field and Pipe-Line Equipment.

•Air Reduction Sales Co.	2
•Alten's Foundry & Machine Works	88
American Cyanamid & Chemical Corp.	16
•American Iron & Machine Works, Inc.	IV Cover
•American Roller Bearing Co.	75
Baird Manufacturing Co.	88
•Baker Oil Tools, Inc.	1
Wm. M. Barret, Inc.	88
•Bethlehem Steel Co.	15
•Cameron Iron Works, Inc.	45
•Clark Bros. Co.	Insert Opp. 53
Climax Molybdenum Co.	87
Construction Machinery Co.	73
Dowell Incorporated	20
•Dresser Industries, Inc.	11 and Insert Opp. 52 and 53
•Emsco Derrick & Equipment Co.	39
Fawick Airflex Co.	19
Ft. Worth Laboratories	88
The Four Wheel Drive Auto Co.	7
Gatoura & Stramler	88
Gemco Oil Tools, Inc.	14
•General American Transportation Corp.	13
General Motors Corp.	9
•Gray Tool Co.	50
•The Guiberson Corp.	5
Heland Hamner Co.	47
Harrison Equipment Co.	78
•Hercules Powder Co.	17
•Hewitt Rubber Corp.	43
Houston Laboratories	88
Houston Oil Field Material Co.	III Cover
•Hughes Tool Co.	I Cover
Hyatt Bearings Division General Motors Corp.	9
•International Derrick & Equipment Co.	Insert Opp. 52
•Jensen Brothers Manufacturing Co.	71
•Jones & Laughlin Steel Corp.	48
•Kerotest Manufacturing Co.	62
King Oil Tools	66
•Kobe, Inc.	11
•Lamotex Equipment Corp.	47
•Lane-Wells Company	12
•Link-Belt Co.	65
Lone Star Cement Corp.	II Cover
Louisiana Oil Reporting Service	70
•The Lufkin Foundry & Machine Co.	58
Mack Trucks, Inc.	61
•Miller Sand Pump Co.	47
•Mission Manufacturing Co.	69
Murphy Diesel Co.	68
Murray Rubber Co.	67
•The National Supply Co.	40-41
•The New Deal Specialty Co.	6
Tom Niland Equipment Co.	78
•Oil City Brass Works	78
Oil Industry Mailing List Co.	88
•Patterson-Ballagh Corp.	18 and 81
•Pelican Well Tool & Supply Co.	72
•Penberthy Injector Co.	46
•Reed Roller Bit Co.	Insert 8-9
Republic Supply Co.	36-37
Robinson Packer Co.	74
Rouse Exploration Drilling Co.	81
•Southern Mill & Manufacturing Co.	10
Southwest Airmotive Co.	76
•Sperry-Sun Well Surveying Co.	77
Standard Oil Company of California	8
Texas Pipe & Supply Co.	22
•Texasteel Manufacturing Co.	3
•Thompson Tool Co.	64
Trading Post Section	79
•The Wheland Co.	4

William M. Barret, Inc.
Consulting Geophysicists
Specializing in Magnetic Surveys
Contracts accepted for domestic and foreign projects, using the most improved instrumental and interpretative technique
GIDDENS-LANE BUILDING
SHREVEPORT, LOUISIANA

HOUSTON LABORATORIES
Analytical and Consulting Chemist
Podbielniak Gas Analysis
Oil Field Brines, Waters and Cores
Complete Evaluation of Crude Oils
Long Distance 267, Box 132, Houston, Tex.

THE FORT WORTH LABORATORIES
Analysis of oil field brines, cores, gas, oil and minerals. Field gas testing. R. H. Fash, Vice President; Long Distance 130 823½ Monroe Street Fort Worth, Texas

WELL LOCATIONS
Elevations • Boundaries
GATOURA & STRAMLER
CIVIL ENGINEERS
1008 Electric Bldg., Houston 2, Texas
C-6953 • Night V-29824

MAILING LISTS
Producers, Refiners, Natural Gasoline Mfrs., Pipe Lines, Drilling Contractors, Supply Companies, Machine Shops, Manufacturers' Agents. Send for catalogue.
OIL INDUSTRY MAILING LIST CO.
319 Castle Bldg. Tulsa, Okla.

BAIRD
SINGLE SEAL SEAT
SEATS and BALLS
DOUBLE SEAL SEAT
• Available in a grade to meet the individual well pumping problem.
• Furnish longer continuous runs.
• Fewer pulls for replacement.
• Insure more fluid lift economy.
Sold thru Supply Stores
BAIRD MANUFACTURING COMPANY
OIL WELL PRODUCTION EQUIPMENT
TULSA

BE SURE TO CHECK THE
TRADING POST SECTION
ON PAGE 79 OF THIS ISSUE